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PLATFORM



Many years ago when I was a junior lecturer at the LSE Lionel Robbins asked me what sort of book young people were reading. I mentioned *Lucky Jim* to him, and said that I thought it was marvellous. He told me that he had read it himself and hated it. It showed all that was wrong with the fifties, and especially with the provincial universities.

When the Robbins Report appeared a decade later and Kingsley Amis proclaimed "more means worse" I reflected on the strange reversal of positions. The Establishment patrician figure had become the prophet of expansion, and the inventor of Jim Dixon had started his new role of reactionary castigator of State intervention and change.

Certainly, when Robbins was appointed chairman of a committee to enquire into higher education, it can hardly have been predicted that his report would be so committed to expansion, or would come out with what was to come to be called the "Robbins principle". Many observers in the early sixties felt that the time was ripe for an increase in the number of young people who could go to universities. But they would have thought that putting Robbins in charge was a way of holding things back rather than rushing them forwards.

The fact that they were mistaken is attributable partly to the other members of the committee. But more is due to Robbins himself. First, there was his desire to get the subject sorted out. He wanted a report of which the arguments could be made to stand up in respectable academic circles.

Second, he was genuinely interested in the available evidence, especially

The free market paternalist

Maurice Peston gives a personal assessment of the influence of Lord Robbins, architect of the university expansion of the 1960s, who died last week

that from overseas. Third, he decided, or was persuaded, that for the report to carry conviction it must be built on a strong quantitative foundation. The initiative he took was organised by Claus Moser assisted by Richard Layard, both of whom owe their subsequent successful careers more to him than to anyone else. The research they undertook was of outstanding significance, and from it stems pretty well all subsequent studies of higher education.

This brings me to a second paradox. In the folklore of economics Lionel Robbins is seen as an *a priori* and anti-empiricist. This is largely attributable to his book *The Nature and Significance of Economic Science*, which strongly emphasised the importance of *a priori* theorizing, but no more so than Keynes had done in his various writings.

Despite this one of Lionel's proteges at LSE had been Bill Phillips, who was one of the originators of high powered mathematical and quantitative methods in economics. This Phillips curve, although notionally original to Phillips, gave rise to a whole empirical industry of its own. That LSE became one of the great world centres in econometrics derives from Phillips' interest in these matters encouraged and facilitated by Lionel Robbins.

Reverting to the Robbins Report, it might have been anticipated that a man who emphasised Adam Smith's doctrine of consumption as the sole end of economic activity would have placed student demand at the centre of his thinking. But this was not so. The Robbins Report was a study of the

market mechanism is played down. Students are not expected to pay their own fees and higher education institutions based on private enterprise are not encouraged. There is some discussion of student loans, but the arguments in favour are not pressed.

Now, Lionel Robbins is one of the patron saints of the Institute of Economic Affairs. I believe a photograph of him adorns their walls. And there can be no doubt that he saw the allocative problem as central to economics, and markets as the key to its solution.

Nonetheless, he never went to the extremes of free marketism that a minority of economists do. He always reserved the right to exercise judgment in particular cases. Thus, he was wise enough to settle for as much as he could achieve rather than risking all or nothing on an abstract principle.

Of course, one of his particular cases was Covent Garden opera — public financial support for which he advocated right to the end. Those of us who twitted him with the comment that subsidy for Covent Garden would think of us were treated with lordly disdain. As a free marketer his paternalism could be very powerful indeed.

My own view is that it was precisely these apparent inconsistencies that made him such a good teacher, and why so many economists owe so much to him. He always left the door open so that you could differ with him on politics and policy without becoming his enemy. (I know there were some economists who hated him, but they were trivially few.) I remember comparing with those who loved him.



Universities... more did not mean worse



Covent Garden opera... favoured subsidies

Thus, at LSE our teachers told us that economics was a science and that it was vital to distinguish scientific statements from value judgments. But in my very first year one of those teachers "proved" to us that rent control was wrong, and another that the Labour Government should not nationalize the steel industry.

Lionel had views at least as strong and sometimes more reactionary, but he did not foist them on his students. The important thing for him was economics, the subject, and he really hoped that the most idiotic of us would learn something by listening to him and arguing with him.

Nowadays, I frequently go and talk to economics sixth-formers in schools. Their teachers are economics graduates, many of the early Robbins generation. Most of these school children want to go on to university or polytechnic, and subject to getting A levels, until recently would have done so virtually by right. Even now pretty well all of them will proceed to higher education. They owe this to Lionel Robbins as much as to anybody.

When I met him at the LSE, I was a first year student at LSE, and he said (as me, I was) that he thought of the

encounter since those were the days when being a professor was something and students were thought so. His first words to me were "I see you are electing to sociology as your subsidiary subject." I said I was, and he enquired what I was doing if and when I graduated. "I will be an economist", I replied. "That is a waste of time!" he said. "You must do mathematics. Sociology is a waste of time!"

He next asked what I did for my School Certificate. "Economics", I said. "Economics is not to be taught at school. It is a subject and not suitable for school people."

Well, if there is too much money in the world today and economics is the dominant subject at school, it is no wonder that the world is in a mess. Whether he had changed his mind on these matters, I imagine he would have shaken his head and laughed, reminding me that there are no benefits without costs.

Maurice Peston is professor of economics at the University of Edinburgh.

Green Paper sets out plans for transferring power from political to parents

Governors to have greater freedom

by Sarah Bayliss

Parents will be in the majority on school governing bodies which will have a legal duty to be more involved in the day-to-day running of their children's schools, under proposals published this week in a Government Green Paper, *Parental Influence at School*.

The paper, which seeks to break the domination of governing bodies by local authority nominees, also aims to give a clear definition to the role of governors and a "firm legal foundation" for headteachers in their relations with local authorities and governors.

It argues that since the passing of the 1944 Education Act power has often shifted away from the governors towards the local authority and that in some cases governing bodies have been "reduced... to a cipher" under local authority policies. It highlights the findings of the Taylor Committee of 1977 but goes only some way towards meeting its recommendations.

For instance, it proposes that governors should be trained — although the £2m it might cost I.e.s. will not be reimbursed by government — and that they should all be eligible for travelling and subsistence allowances. The special allowances previously paid to local authority nominees should cease, so the overall financial effect for I.e.s. will be "neutral".

Taylor recommended that there

should be an equal balance of representatives from parents, the I.e.s., the community and teachers on all governing bodies, and the Green Paper is a clear departure from that. Even on the largest governing bodies with a maximum of 19 governors, teachers will get no more than two seats.

Mr Giles Radice, Labour's spokesman on education, reacted strongly to this notion in particular. "We believe that parents should be strongly represented on governing bodies and we set up the Taylor Committee with that view in mind. But like Taylor we are against any one group having an overall majority."

Many of the implications of the Green Paper are still not clear. On discipline, however, Sir Keith Joseph, the Education Secretary, confirmed to *The TES* that governors would be able to ignore a local authority's ban on corporal punishment. The Government does not accept that I.e.s. should have "unspecified and broad powers to override governing bodies and headteachers in matters of discipline."

The Government believes that "in large measure it falls to the headteacher to secure acceptable standards of behaviour throughout a school." The governing body, however, should have responsibility for establishing guiding principles within which the headteacher operates.

On the curriculum the Green Paper says that having sought the advice of the headteacher and having consulted the local authority, governors would have a duty to "determine the statement of the school's curricular aims and objectives". "Organization and delivery" of the curriculum would be left to the head.

The new proposals contained in 12 chapters and 34 pages, cover 20,000 county schools and maintained special schools and 3,500 voluntary controlled schools in England and Wales. All those schools will require new instruments and articles of government: the I.e.s. will be responsible for drawing them up and DES approval will not be required since the composition and functions of governing bodies will be enshrined in the new law.

Voluntary aided schools are unaffected by the proposals with the exception of a special clause at the end of the Green Paper, allowing voluntary controlled schools to become aided if they wish. It is understood that a handful of such schools may emerge.

The introduction states that parents are not contributing as much to school life as they could. "At present most governing bodies do not adequately serve the aim of promoting the school as a force for good in the life of the pupils, their families and the community which it

serves. The Government now intends to extend its policies for raising standards in schools by enabling parents to improve the work of schools."

Under the proposed new Education Act, the size of a school's governing body would be set and most governors, excluding the head, would hold office for three years. Appointments could be staggered and, given "some immediate loss of expertise on governing bodies and fairly frequent changes of membership", a clerk should be appointed by the I.e.s. with a working knowledge of the authority.

A school with fewer than 100 pupils would have a total of nine governors. A school with 600 pupils or more would have a total of 19 governors, including 10 parents, six I.e.s. appointments, the head plus two teachers. Voluntary controlled schools would have fewer parents to allow for foundation governors.

On the grouping of schools under one governing body — which used to be commonplace — the paper suggests that this would be confined to two schools per group and would be permitted only in exceptional circumstances. All new schools, including those which arise out of reorganization, would have shadow governors.

On finance the Green Paper says the governors ought to be aware of what is being spent on that school and to decide whether it is getting value for

money. The governors should determine how capital is spent in consultation with the head "subject to any financial rules which the I.e.s. might draw up".

The use of school premises after hours should be under the governors' control so that "this public asset is as fully utilized as is practicable".

In a chapter on the appointment and dismissal of staff, the document says many existing articles "do not do justice to the legitimate interests of the governing body or of the I.e.s."

On headships, the governors should be able to exert an influence at every stage of the selection process and the I.e.s. "would appoint the recommended candidate unless in its capacity as employer it declined to do so".

The plan to give parents a built-in majority was condemned by headteachers as "far too extreme and potentially very dangerous". Mr David Hart, general secretary of the National Association of Head Teachers, said the association strongly supported the "four equal shares formula" of the Taylor Report.

Ironically, however, Lord Taylor is all in favour of the Government's plan. The "four equal shares formula" had not worked as well as he had hoped in the authorities which had tried it, he said on Wednesday.

New exam basis comes closer

by Nick Wood

Sir Keith Joseph, the Education Secretary, has taken an important step down the road towards implementing one of the key policy changes signalled in his Sheffield speech in January.

He has approved plans from the Secondary Examinations Council to draw up grade-related criteria to accompany the syllabuses and papers for the proposed new 16-plus exam.

Sir Keith has asked the council to add biology and chemistry to its slate of eight key subjects for initial development work.

The aim of the move is to break with the present norm-referenced exams which rank candidates in order of performance and to embrace a system of assessment that spells out clearly and in some detail their individual attainments.

In a letter to Sir Wilfred Cockcroft, chairman of the SEC, the Education Secretary says: "The fundamental objective should be to stretch candidates throughout the ability range, while enabling them all to show what

they know and can do". Sir Keith also agrees a timetable for the SEC's work, which will be supported by an extra £50,000 to £60,000 a year if required, and will be carried out by subject working parties.

Draft schemes of assessment should be ready by this time next year for consultation and the final versions would then appear 12 months later.

This schedule would enable the launch of the first 16-plus syllabuses shaped by national criteria in 1986 to coincide with the revised methods of assessment. First exams under the new approach would take place in the summer of 1988.

Sir Keith's comments cannot be taken as indicating his intention to approve the proposal to scrap O levels and CSEs. He believes his ideas can also be encapsulated within a "harmonization" of existing syllabuses and exams — a view that is disputed by many experts from the exam world and education.

NATFHE rejects 4.5%

Members of the biggest college lecturers' union voted this week to reject a 4.5 per cent pay offer recommended to them by their leaders just before Easter, *Diane Spencer writes*.

The 76,000-strong National Association of Teachers in Further and Higher Education was offered 4 per cent plus £300 for those stuck at the top salary bill of around 4.5 per cent. It was accepted by the negotiators at a time when the teachers had been offered 3 per cent.

NATFHE last Tuesday only three out of the 14 regions accepted the deal: the West, the south west and, by a narrow

margin, Yorkshire and Humberside.

Union leaders are now requisitioning a meeting of the Burnham committee during the next two weeks to seek an improved offer. If this is not forthcoming, a one-day strike will be called in June, then plans will be made for prolonged industrial action in the autumn term.

This is the first time that the union has rejected an offer which its leaders had accepted. One of its forerunners, the Association of Teachers in Technical Institutions, did so in 1969, but then the option of arbitration was open to them. This is not the case today. The only course left if negotiations fail is industrial action.

Science assessment

Ways of assessing 11-year-olds' grasp of science are described in a new publication from the Assessment of Performance Unit. Six categories of science skills are discussed: ability to plan and perform investigations, the ability to interpret information, presentation, the use of graphs and charts, and the use of instruments and apparatus.

Science Assessment Framework Age 11 is being sent free through I.e.s. to all schools, teacher centres and teacher-training establishments.



Patrick Harrington leaves... a political message behind

Poly silence on pickets

by Diane Spencer

Staff at North London Polytechnic have protested strongly this week at attempts to force them to identify student pickets at the request of a National Front organizer.

The Inner London Education Authority also announced that it is setting up a committee to "deal with the current problems at the polytechnic".

The statement was issued on Tuesday, before the Wednesday morning deadline set by Mr Justice Mans-Jones for several members of the teaching staff to appear in court to "face the gravest peril" should they fail to name 18 students on the picket line.

Staff said: "We feel that this imposes an intolerable strain on the staff/student relationships which are essentially one of trust and we are gravely concerned about this process, particularly as we fear it may expose students to intimidation and violence."

The outcome of the court hearing was not known as *The TES* went to press.

The trouble at the polytechnic arose when left-wing students decided to bar Mr Patrick Harrington, aged 19, a National Front student organizer and a second year philosophy student, from attending lectures and classes. The college governors offered private tuition in an attempt to defuse the situation.

This he refused and won an injunction from the High Court banning pickets from blocking his access to the polytechnic.

University lecturers consider pay claim action

by Bert Lodge

Delegates to the summer conference of the Association of University Teachers in Manchester last weekend backed their negotiators' rejection of a 3 per cent pay offer but voted against a proposal to withhold examination marks.

The resolution went no further than adopting a policy of non-cooperation and a recommendation to local branches to consider how they could cooperate with other campus unions in a campaign of industrial action culminating in half-day strike on May 31.

No official response was made to an informal offer from the vice-chancellors of a little over 4 per cent plus £230 for the 8,500 lecturers on the maximum of the lecturer scale, bringing the total increase to 4.58 per cent. However, this was also thought unsatisfactory.

After hearing of the rejection of 4.5 per cent by the National Association of Teachers in Further and Higher Education on Tuesday, an AUT spokesman said: "This just firms up our position. If they had accepted we would have had difficulty in pushing for more."

AUT leaders are also waiting for the response expected today from about 18,000 laboratory technicians, members of the Association of Scientific, Technical and Managerial Staffs, who have been offered 4.5 per cent across the board.

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Welsh RE staff admit to evangelical aims

by Bert Lodge

More than 150 religious education teachers in Welsh secondary schools say their aim in teaching their subject is to spread the Christian faith.

They were among 789 RE teachers, 90 per cent of the total, taking part in the most comprehensive survey of the subject carried out in Wales. It was directed by the Welsh National Centre for Religious Education at Bangor. Even allowing for the 18 voluntary aided schools among the 237 responding, the frankly evangelical, even proselytizing approach among such a big proportion of RE teachers, including 29 heads of department, will cause alarm among humanists who oppose their campaign to abolish the subject in schools a few years ago only on the assurance that RE would be limited to teaching "about" religion.

This view of the subject is also shared by many Christian educationists and is reflected in the new agreed syllabuses authorities have adopted in recent years. The report comments: "What must be a cause of concern is that so many teachers have aims which... in the case of Christian instruction, are... wholly incompatible with the aims of the agreed syllabuses."

Such teachers make the head of department's job more difficult, the report says. Responsible for making clear to their colleagues what is required, they are not helped if those colleagues approach their task with "confessionalist assumptions".

The survey concentrates on the year 1981, and shows religious education to be the Cinderella of the timetable, often taught by poorly qualified, unenthusiastic staff who are overworked and under-resourced. The daily assembly for the whole school survives in only a quarter of county and voluntary aided schools and just over half of the independents.

Stern measures are recommended to

improve the quality of RE teaching in Wales. Every teacher of the subject should be compelled to go on an in-service course at least once a year. And nobody unqualified should be appointed to an RE post except on a temporary contract.

The report also proposes removing RE from the options scheme and making it a core subject along with such subjects as English and mathematics. The logic of this is that RE is a curriculum subject required by law to be taught at least up to school leaving age.

The recommendation of compulsory in-service training follows the discovery that three out of four RE teachers had not been on a course in the past five years. More than half of those teaching statutory RE were unqualified and nearly half of those teaching the subject at A level, and 38 per cent at O level and CSE, were also unqualified to do so.

Altogether, nearly 40,000 pupils in Wales are being taught RE by teachers with either inadequate qualifications or none at all. This figure includes more than 300 A level candidates and more than 4,000 doing CSE or O level.

And with the challenge of the new syllabuses, the report comments: "Teachers who were able to get by on the strength of a little Bible knowledge will find it much harder to cope. Even most of the qualified teachers will find themselves pressed."

Lack of expertise was not helped by the limited amount of money spent on the subject. On average, RE occupies 4.5 per cent of the timetable but receives only 1.5 per cent of the school capital allowance.

More than half of the departments received 20p or less. One third of the RE departments in Gwynedd received no more than 5p which cannot be adequate for writing paper, let alone anything else.

Of the textbooks used below sixth-form level, 60 per cent were published before 1969. They were out of date in their approach and "incompatible with the teachers' own educational aims and the requirements of the agreed syllabuses".

RE 11-18 in Wales. The Welsh National Centre for Religious Education School of Education UCNW, St Mary's, Bangor, Gwynedd, £3.50.

Day pupils boost public schools rolls

by Nick Wood and Mike Durham

A surge in the number of day pupils in independent schools has more than wiped out a decrease in boarders to generate the first net increase in rolls for three years.

The figures come from the annual census carried out by the Independent Schools Information Service in January.

Among the 1,297 schools included in the survey, numbers rose from 407,664 in 1983 to 408,672 - an increase of 1,008 or 0.2 per cent.

Mr Tim Devlin, ISIS director, described the figures as a remarkable achievement when the total school population is falling by 3 per cent a year.

But he was concerned that fees (up 8 per cent this year) are still outstripping inflation.

"If fees can be brought down to within the levels of inflation, then the recession, as far as the independent sector is concerned, could be well and truly over," he said.

Mr Devlin predicted that this would happen but that the salary levels of teachers at independent schools would rise by more than Burnham levels.

Mr John Clark, chairman of IAPS, the prep schools association, said he was "putting by" between 6 and 7 per cent to pay staff. Mr David Emms, Headmasters' Conference chairman,

said he was working on a notional level of 5 per cent.

Much of the growth in pupil numbers is concentrated on increases in the number of girls receiving a private education. The number attending girls' schools and boys' schools that have recently become coeducational went up by round 2,000.

The 172,000 girls at ISIS schools now make up 42 per cent of the total - up from 37 per cent a decade ago.

The increase in the number of girls at independent schools overlaps with a rise in the numbers of boys and girls at day schools. The figure for all age groups attending preparatory and senior schools rose by about 2,500.

This was offset by the number of boarders at boys' preparatory and senior schools, which fell by about 1,500 or 2.6 per cent.

Numbers of boarders at girls' schools rose by 1.2 per cent.

The survey threw more light on the trend for sixth-formers to switch between the state and private sectors.

Last year, 5,452 boys and girls from independent schools decided to pursue A levels at comprehensives and tertiary and sixth form colleges (1,000 more than the year before) but an even greater number moved in the opposite direction.

More school-leavers from independent schools are also going on to polytechnics instead of universities.

"They are being discriminated against some are realizing that the more vocational, more down-to-earth and have a wider curriculum," Emms said this week.

Equally, public and independent schools are using more polytechnic teachers or graduates from technical universities instead of Oxford and Cambridge.

The survey shows that private school numbers have been boosted by a further 4,000 children who have been awarded places under the Government-funded assisted places scheme. Some might point out that this increase has been almost wiped out by the decline in the number of I.C.S.s paying a places in boarding and denominational schools (down by 3,800), and that numbers helped by the scheme are only a fraction of the 72,000 receiving private scholarships and bursaries.

Fees in January 1984 were up 8 per cent compared to an inflation rate of 5.1 per cent. Average annual income stood at: boarding £3,300; day fees £1,374. The ISIS figures include more than all independent schools in Great Britain and Northern Ireland. The latest figures from the Department of Education show that there are 125 such schools educating around 500 children or 6 per cent of the total school population.

The Greater London Staff Association, which represents the majority of schoolkeepers employed by the London Education Authority, is the first union to use a video in arbitration hearing. The award: increase schoolkeepers' salary pool allowance from £24 a year to £390 - a rise of 58 per cent.

Thirty students at Bolton Institute of Higher Education are seeking £175 compensation for the inconvenience they were put to while three college hostels were being redecorated.

BIHE student union president Andy Reynolds said that some students had been unable to use their own bedrooms while the work was going on and had been forced to visit neighbouring hostels.

They felt they should have been consulted before the five-week scheme began and were now pressing for a £25-a-head rent rebate, he said.

The crunch will really come whenever the membership as a whole has to vote on industrial action.

Members are also angry with the Government's White Paper, *Training for Jobs*. Several regions castigate the MSC for exercising power without accountability, through its fluctuating arrangements, which the White Paper will exacerbate.

Although the union's adult education committee welcomes the MSC's Training Strategy, it wants a genuine partnership between the MSC, the local authorities and other providers of adult education.

South-east region says the Government should ensure that VAT is not passed on adult classes and that other groups are demanding the abolition of the 24-hour rule for the unemployed.

By Monday there might be enough pressure left for a vigorous discussion of the West Midlands motion on racism. The change for the next conference to include an anti-sectarian and anti-racist working party to be set up of black and white members to investigate the extent of racism within the education system.

The motion also deplores the "gross racism" of the "Flemish" movement in the north-east of England and the considerable embarrassment to

Will NATFHE step back from the brink?

College lecturers have for the first time rejected a union-recommended pay deal. Its annual conference may vote for industrial action but would the membership follow? Diane Spencer reports.



Peter Dawson... defended the negotiators

union leaders for more than a year. The union, while stoutly defending anti-racism, maintained that Mr John Fernandez, a black lecturer at the college, should have used NATFHE and not the media to conduct a campaign against racism among stu-



Cecil Robinson... praised the solidarity

dents. Another big issue will be the dispute with Gwent education authority. Like Manchester and Croydon before it, Gwent is attempting to increase class contact hours and worsen conditions of service. NATFHE won in the case of

of members. "I am proud of the way they have responded to the call of NATFHE both locally and nationally against a bone-headed authority that has broken every agreement in sight."

In the private session, delegates will decide whether to reserve places on the executive for women. Last year there was some debate as to how this could be achieved and the proposals could meet some resistance.

It has been a difficult year for the union's headquarters, beginning tragically with the death of the popular membership and case-work secretary, Mr Tom Jones, the day after the annual conference in Blackpool.

Since then one assistant secretary has gone on two years' secondment to the MSC, another left to take a job at Coombe Lodge, and the negotiations secretary retired early through ill-health. Staff have also had to contend with an inexperienced executive.

This week Mr Dawson praised both his staff and the executive for their hard work and unity of purpose achieved so far. "Given the year and the fact that FE has taken, the union is remarkably strong," he said.

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IN BRIEF

Move to Right

Support among West Midlands schoolchildren for extreme right-wing political parties is "dramatically increasing", according to research published last week.

The main reason for growing support for the National Front and British Movement appeared to be their policy of expelling non-whites from Britain, the survey of 2,500 15 and 16-year-olds indicated.

The Birmingham University research showed that in 1983, 14 per cent of white fifth-formers agreed that the NF or BM was their first-choice political party. Another 16 per cent chose one of the two parties as their second preference.

This total of around 30 per cent represented a doubling of support in the same schools since 1980, said researchers Raymond Cochrane and Michael Billin.

Peak-ing Chinese

A Chinese Government delegation visited the Derbyshire Peak District last week as part of a European fact-finding tour to decide whether to open youth hostels in their own country.

The seven-man party spent the night in a hostel at Matlock and were treated to a traditional English fried breakfast. But they were excused their share of domestic duties usually expected of visitors.

The party is being accompanied by Mr John Parfitt, vice-president of the International Youth Hostel Federation, who has just returned from talks in China. "We hope to open up China to people who wish to travel cheaply," he said.

Video award

An arbitration panel has awarded pay increases to schoolkeepers who supervise swimming pools - after watching video film of them at work.

Rent claim

Thirty students at Bolton Institute of Higher Education are seeking £175 compensation for the inconvenience they were put to while three college hostels were being redecorated.

BIHE student union president Andy Reynolds said that some students had been unable to use their own bedrooms while the work was going on and had been forced to visit neighbouring hostels.

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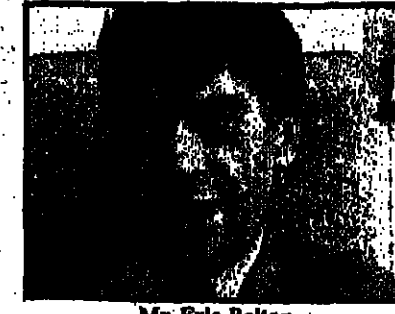
Local links

Exhibitions of work by ex-pupils have been mounted in some Salford primary schools to encourage links between them and their local secondary schools.

At the same time, equipment work from the primary schools has been displayed in the entrance hall of the secondary school.

According to Mr Paul Doherty, former teacher at St George's Catholic High School in Worthing, Salford, who held a sole post of secondary liaison for the project, the work from the primary schools has been displayed in the entrance hall of the secondary school.

Writing in the June issue of *Education*, Mr Doherty, who is now deputy head of a Cheshire secondary school, describes how St George's worked with its four feeder primary schools to smooth the transition for children.



Mr Eric Bolton

broadened many teachers found themselves doing too much, not very well. But he disagreed that children as young as nine achieved higher standards and greater competence when they were taught by specialist teachers when they were not.

The Inspectorate itself had plenty of evidence from secondary schools that specialist teaching did not automatically produce good results. "I agree that it is helpful to have some good specialist teachers, but I don't think this automatically means that stan-

MPs to quiz Inspectors

by Sarah Bayliss

A team of HM Inspectors will be the first witnesses to give evidence to the Commons' Select Committee on Education when it opens its inquiry into primary education next month.

The terms of reference of the inquiry into "achievement" in primary schools are wide and include: preschool education and the links between nursery and primary school; the effect of falling rolls; the viability of small schools; methods of teaching, including remedial teaching; the role of parents and governors; the curriculum, including specialisation; foreign comparisons.

Mr Eric Bolton, the Senior Chief HMI, helped set the tone for a debate on the curriculum, and specialisation in particular, when he addressed the annual conference of the National Association for Primary Education recently. His speech, which advocated an end to the domination of single-class teaching and the need for nine-year-olds to be taught for some of the time by subject specialists, especially in science and maths, has been greeted cautiously in the education world.

tion in the School of Education at Bristol University, said his students had asked his opinion after a front page report in last week's *TES*. "I had to say that it all depends."

The notion of specialists in primary schools was excellent if it meant teachers sharing expertise and helping each other out in areas where they felt weak. "But if it means the beginning of what the Canadians call rotary teaching, with pupils moving from one teacher to another for separate lessons, that indeed would be retrograde."

He said it was crucial that primary science should be well taught, and that meant pupils learning by discovery; if there were to be specialists in science then their style of teaching must follow the best traditions of primary education.

Professor Ted Wragg, from the School of Education at the University of Exeter, said it was pertinent that the primary survey of 1978 found that only one class in ten was getting good quality science teaching. And he sympathized with the view expressed by Mr Bolton that as the curriculum

Need for 16-plus has diminished, Sir Keith told

by Richard Garner

Headteachers have acknowledged that the need for a common examination at 16-plus has been reduced, according to a paper sent to Sir Keith Joseph, the Education Secretary.

The paper, prepared by the newly-formed Committee of Heads of Educational Institutions, says that the main year for assessment of pupils should be moved from 16 to 17.

The committee represents five organizations - the Association of Principals of Colleges, the Association of Principals of Sixth-Form Colleges, the National Association of Head Teachers, the Secondary Heads Association and the Tertiary Colleges Association - and is chaired by Mr John Swallow, president of the NAHT.

The committee says it wants to look beyond any decision by Sir Keith on the 16-plus and is convinced "the way ahead lies in a planned policy which facilitates the progression of young people and allows them to take forward their records of achievement, course credits, assessments and examination results".

It adds: "There are indications that other approaches like credit accumulation, successful completion of modules and graded tests may well be more motivating to pupils and teachers and would seem to offer more useful information to employers."

The paper calls for "a greater degree of curricular coherence" between differing educational institutions - and adds that all pupils should have a

curriculum which prepares them for adult life.

It continues: "This concept of a curriculum of preparation for adult life will certainly require new methods of assessment and might reduce the dependence placed at the moment on a formal single subject examination at 16-plus."

"We would hope that any such examination reform would bring about reorganization of the present somewhat random collection of single subjects on offer to pupils. We continue to be concerned that pupils are forced on to a relatively narrow range of options at 14 and are taught in a way which is dominated by examinations at 16."

The paper calls for a dialogue on reform that will include parents and employers, adding: "It is they, above all, who appear to value O and A-levels and who have discredited CSE. They have to be convinced that the emphasis of assessment should move from 16 to 17 and that this would allow greater freedom to do all that needs to be done before 16 and encourage a new approach to 17 and beyond."

The committee is now seeking a meeting with Sir Keith to discuss the paper and says that the chairman of the Confederation of British Industry's Schools Panel and a senior representative of the Society of Education Officers have agreed to give the paper broad support and accompany the delegation.



Aer Lingus School

Scotland won the international final of the Aer Lingus/Golf Foundation schools' golf championship at Lahinch on the west coast of Ireland last weekend.

A team of three boys from Marr College, Troon, held off a strong challenge from Denmark and England. But Andrew McQueen (left), Alasdair Watt and Fraser McCulloch had little time to celebrate their success. The next morning they were in a local classroom taking examination papers in history that had been specially flown over when it was realized that the boys would not have time to return home and take the exams with their classmates.

100,000 teenagers denied place in HE

The leader of Britain's 32,000 secondary teachers has warned that 100,000 youngsters will be denied access to higher education over the next 10 years if the Government persists with present policies.

Dr Bill Stephenson, president of the Association of University Teachers, told his union's summer conference in Manchester that 100,000 youngsters will be put at risk and 100,000 "blighted" if student numbers were to be cut by 20 per cent.

"If the Government is prepared to put hundreds of millions of pounds into the Youth Training Scheme, it is not making sense to put in the resources to fund our higher education system properly and allow these people to fulfil their real potential."

Strike threat to colleges

A call for a token national strike by college lecturers in support of fellow union members facing dismissal for refusing to accept heavier teaching loads will be made this week.

An emergency motion calling for sympathy action against the Labour-controlled Gwent County Council will be tabled at the annual conference of the National Association of Teachers in Further and Higher Education, Birmingham.

Gwent has given notice to about 100 lecturers and offered re-employment with one or two hours of extra contact per week from September. NATFHE has instructed members not to accept the new terms.

Justice Act 'recipe for recidivism'

The Criminal Justice Act which has been in operation for one year is a "recipe for recidivism" according to the campaigning organization, New Approaches to Juvenile Crime.

In a new report, *One year on*, examines the effect of the Act on the way juvenile offenders are dealt with by the courts.

It found a marked movement up the custodial ladder away from detention centre orders to the more serious sentence of youth custody.

Youth custody centres, like the borstals they replaced, contain a higher proportion than detention centres of experienced and serious young offenders, the report says.

The number of youngsters leaving borstal in 1979 reconvicted within two years was 83 per cent compared with 72 per cent recidivist rate in detention centres, reflecting the fact that the population of the former tends to be more criminally sophisticated, it says.

"It is therefore a cause for serious concern that many juveniles who would previously have received detention centre orders should now be entering youth custody instead."

In comparison with the custodial options of the Act, the development, availability and use of its non-custodial provisions has been slow and patchy, the report says.

These non-custodial measures include intermediate treatment, and community service orders for 16-year-olds. By last month, 13 out of the 56 probation areas in England and Wales had no provision for such orders, the report says.

Intermediate treatment schemes have been boosted by grants of £15m from the Department of Health and Social Security, but their distribution is patchy.

One year on, the impact of the 1982 Criminal Justice Act on juvenile offenders, New Approaches to Juvenile Crime, 189 Clapham Road, London, SW9 0PU.

Apathy on teaching council

by Bert Lodge

Only 3 in 10 Scottish teachers bother to vote for representatives on the General Teaching Council of Scotland, the annual teacher education conference of the National Union of Teachers was told last weekend.

Mr Tom Bone, principal of Jordanhill College, Glasgow, and member of the Scottish GTC, said the continuing apathy among teachers was a major disappointment.

"They even get the ballot papers through their letterbox. But most teachers see the General Teaching Council as having no real impact on them."

Among the achievements of the council, formed in 1965, Mr Bone listed the elimination of unqualified teachers from the profession and the acceptance

of the rule that teacher trainers must be trained teachers themselves.

But it had failed to make training for further education teachers compulsory and had had no influence on in-service training. Nor had it done anything about lazy or inefficient teachers, although 10-15 probationers a year had their provisional registration with the council withdrawn. It also with drew the registration of three or four teachers a year who had been convicted of criminal offences.

"The great strength of the GTC is its independence. It is paid for by Scotland's 65,000 teachers who each contribute £3 a year towards it. That has enabled it to oppose union views on some occasions."

Schools policy attacked

by Mike Durham

Government policy is demoralizing and dividing the education service by trying to squeeze more out of less, Mrs Frances Morrell, leader of the Junior London Education Authority, claimed last week.

In a lecture at Goldsmiths' College to mark the 40th anniversary of the 1944 Education Act, Mrs Morrell accused the Government of running a "Jekyll and Hyde" education policy.

She said: "The Jekyll and Hyde quality of present day policy combines demand for improvement in quality with demands for contraction in the service, criticism of the competence and attacks on the living standards of those who work in it, and the assumption by the minister of directive powers."

"There is no doubt that government policy is demoralizing and dividing the education service, which the 1944 Act united and inspired."

Mrs Morrell said that compared with 1944 there was now less commitment over policy, contraction of the service instead of continued expansion, and an equitable division of funding, and much government control of LEAs.

She claimed that in real terms education spending had fallen by 6 per cent in the past six years, although spending in other areas had risen.

"The false economic logic advanced to support contraction of education has been combined with a special logic of 'accountancy' described as 'managing better with less', she said.

Nick Wood reports on the controversy over a "misleading" new A-level chemistry course

Cutting back the corners of truth



Nuffield chemistry: hidden dangers in allowing students to discover things for themselves.

The new Nuffield A-level chemistry course has been attacked by an Oxford don for its "dangerously misleading" approach to certain key scientific concepts.

Dr Peter Atkins, tutor in physical science at Lincoln College, Oxford, says the new course, a far-reaching revision of the existing Nuffield syllabus launched in 1970 and followed by around one in four six-formers studying the subject, has gone astray.

"The revision misleads the audience and is likely to result in much confusion, especially where the corners of truth have been cut too hard," he says.

Dr Atkins' trenchant comments were made at last month's annual chemical congress at Exeter University organized by the Royal Society of Chemistry.

There are two main strands to his criticism: the Nuffield emphasis on learning through discovery, although "excellent in its intention", can lead students to a false interpretation of data in the interests of expediency and simplicity; and the way the course

introduces the key concept of entropy, a thermodynamic property with both statistical and thermal ramifications, is unsatisfactory.

Dr Atkins takes issue with the way the course explains how molecules absorb light. "I recognize that corners do have to be cut, but I do wish this example of dangerously close corner-cutting to be seen as a warning that the Nuffield type of discovery by experiment coupled with naive interpretation and rule-of-thumb assessment of magnitudes can give a wholly misleading impression."

"I feel that the authors would have done better in some cases to have adopted a more conventional, dogmatic style of exposition, and to have told the truth rather than to have allowed the student to discover falsity, however joyfully," he says.

Coverage of entropy falls down by stressing the statistical aspects of the concept at the expense of the thermal, he says.

Nevertheless, he finds much to applaud in the new course, saying that the balance is "reasonably good" and

that it is "admirably modern" in its look.

He congratulates the authors on "biting the bullet" of entropy, but says that the intention behind the "very good indeed" course was oversteering his case.

The section on entropy took up one twentieth of the course, although Dr Atkins had talked of errors in the text he had accused the authors of being "overly pedantic".

Entropy had been presented in numerical terms because this was "simple and visual". The treatment did not lead him to being misled, he said.

"Dr Atkins has some good points which the authors, and those responsible for disseminating the Nuffield Advanced Chemistry, have noted," said.

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Underpaid tutors win £750,000 from ILEA deal

by Richard Garner

Hundreds of inner London teachers who work from home have been paid less than the nationally agreed rate for five years. But now they have won back-pay totalling nearly £750,000.

Union leaders representing the Inner London Education Authority's 450 home tutors had said they believed it was illegal to pay tutors a lower rate per hour of work than primary and secondary teachers in schools.

After taking legal advice and consulting with the Department of Education and Science, the ILEA has reluctantly agreed to award the home tutors back-pay to cover the five years they were receiving less than the rate for the job - at a cost of £632,562 in pay and £83,924 in pension costs. In addition, an extra £298,626 will have to be found in this year's budget to meet their salaries.

The agreement was due to be ratified by the authority's schools subcommittee yesterday and will mean a pay rise of about 15 per cent for the home tutors - who at present earn £7.56 an hour for the first 10 hours of work and £4.50 per hour thereafter.

Now the authority has agreed that an amendment to the 1979 Burnham regulations, which cover teachers' pay, saying that all teachers providing primary and secondary education other



Martin McLean and Elizabeth Newman



Bryan Dockrell

Choir boys pick public schools

Nine out of 10 boys leaving choir schools go on to public schools and three out of four of them pay less than the full fees, a survey has found.

Members of the 40-strong Choir Schools Association attending the annual meeting at Lincoln last week were told that out of 26 schools taking part in the survey, 17 reported a significant increase in applications for voice trials amounting to an average of four applications for every place. Four reported a decrease to two applications per place and five had remained the same.

Westminster Abbey school had the usual 60 or so applications for two places, the conference was told.

Scholarships and exhibitions subsidize most choristers when they leave choir school for the independent sector. Last year only 1 per cent benefited from the assisted places scheme, while 13 per cent entered the maintained sector.

Of boys entering choir schools, most aged eight or nine, nearly two-thirds of fees are now subsidized. Two choirs, York and Gloucester, give 100 per cent bursaries.

The total support for chorister fees is now nearly £1.5m compared with £1.125m two years ago.

"We must continue widening the social content of our intake so that any boy can come to us as a chorister, whatever his family's resources," Mr Peter Hannigan, chairman of the association and head of Westminster Cathedral choir school, told the conference.



Tudor Powell Jones

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Heads mindful of pay claim

The traditional trade union topics of pay and conditions will be uppermost in the minds of those travelling to Brighton next week for the annual conference of the National Association of Head Teachers.

Half-term will give the 22,500-strong association a chance to debate an emergency motion on the industrial action currently hitting the classroom. It will also discuss the local authorities' refusal to budge from a 4.5 per cent pay offer to the profession.

The NAHT has this year gone further than ever before in supporting the teachers' actions - and all members have been told they should do nothing to undermine the industrial action.

However, members have voiced fears that despite the good intentions of the two largest teachers' unions, the National Union of Teachers and the National Association of Schoolmasters/Union of Women Teachers, in trying to avoid disruption to examinations, candidates taking CSEs and GCEs are bound to suffer as the

Richard Garner looks at the issues to be raised at next week's conference of the National Association of Head Teachers

dispute continues.

The NAHT, in common with other teachers' organizations, reports a flood of applications for membership since the current industrial troubles started.

Their ranks will be swelled, too, if the conference votes to allow deputies to belong to the union - a move recently introduced by the rival Secondary Heads Association.

The NAHT will debate an emergency motion on pay next Thursday - but also plans to devote a whole session of its conference the following day to debating the salary restructuring talks.

This year's conference will also tackle some important educational issues notably the findings of a comprehensive working party which last year reviewed the working of the 1944 Education Act as applied to religious instruction in schools.

In addition, eight separate motions have been tabled on the implementation of the 1981 Education Act designed to integrate children with special learning difficulties into mainstream schools.

This is the largest number of motions tabled on any one subject, reflects the growing concern of head teachers about the fact that no sources have been set aside for implementation of the Act.

The conference will see Mr Rex, the headmaster of Hutton school in Leeds, taking over from outgoing president, Mr John Swales, head of Ongar comprehensive in Essex.

Push for mother-tongue

by Mike Durham

Labour candidates in the European elections are being urged to campaign for more mother-tongue teaching, the abolition of corporal punishment in schools and more exchange visits.

The Socialist Educational Association has sent candidates a 10-point programme of educational issues which it believes to be relevant to the European Parliament elections on June 14.

It wants Labour Euro-MPs to press for Britain to implement the European Commission's directive on mother-

tongue teaching in British schools, and for Britain to abandon corporal punishment.

Among other points the SEA is pressing for exchange visits to be a routine part of educational programmes and available to all.

The SEA is also sending a questionnaire on education issues to all 15 candidates from all three parties in the ILEA area. One suggestion is for a Europe-wide school record card to standardize pupil assessment throughout the EEC.

British Council travel awards

A number of educationists are among the winners of the special British Council travel awards, made to commemorate the organization's 50th anniversary.

The awards are worth up to £1,000 plus return travel, and attracted 1200 applications. Eighteen winning projects were chosen.

They included: ● A survey of research into the assessment of secondary school pupils in Australia by Dr Bryan Dockrell, director of the Scottish Council for Research in Education.

● A study by Miss Elizabeth Newman, lecturer of education and linguistics at Sheffield University, into the quality of English speaking among students at a Soviet university.

● Work on in-service training and the quality of education for handicapped children in Peru by a speech therapist, Ms Daidre Duncann of the West Bromwich Area Health Authority.

● A survey of Venezuelan educationists trained in this country to see what links they retain with Britain by Dr Martin McLean, lecturer in comparative education, University of London Institute of Education.

● A survey of teaching programmes for gifted children produced by Canadian universities by Dr Tudor Powell Jones, dean of education and combined studies, Gwent College of Higher Education.

Jobless rise among girls

Unemployment among girls in London has risen almost twice as much as it has among boys in the past year, says a report published this week by the Inner London Education Authority.

In August 1968 only 518 girls were on the register compared with 152 boys. By August 1983 there were 618 girls and 7,997 boys.

One reason for the rise in figures, report suggests, is that girls are more likely to register as unemployed

Schools' satellite back on the air

UOSAT-2, Surrey University's second satellite for schools, is now back on the air after being silent for more than two weeks since its launch at the beginning of March.

Scientists from the university and contact with the craft last week succeeded in switching on the on-board beacon which beams down information that schools can use to track its progress.

Signals from the satellite are being transmitted continuously on 141.25 MHz and can be picked up by schools with simple VHF receivers.

Efforts are now being made to target an intermittent fault in the communications system. If they prove successful, the spacecraft, which is the focus of a project involving 40 schools, will be moved into its permanent orbit and begin sending TV pictures of the earth.

The on-board educational and scientific experiments can then begin.

How special need is met

The Inner London Education Authority is setting up a committee of inquiry into the range and quality of provision for children with special educational needs.

It will be chaired by Mr John Phipps, former HMI staff inspector for special education. The review follows a series of ILEA inquiries - into secondary schools by the Hargreaves committee and into primary schools under the chairmanship of Mr Norman Thomas due to report in the autumn.

Mr Phipps' committee will look at special education in the light of the 1978 Warnock report and the Education Act which put some of the report's recommendations into effect. It is expected to report by next Easter.

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BRITANNY - THE EMERALD COAST	4-8	67
BRITANNY - THE SOUTH COAST	4-8	70
BRITANNY IN THE COUNTRY	4-8	71
PARIS	4-8	78
LOIRE VALLEY	4-8	87
PARIS AND LOIRE VALLEY	6-8	105
VALLEY OF THE SOMME	5-8	87
ARDECHE VALLEY	7-10	109
CHAMPAGNE COUNTRY	4-8	80
PROVENCE AND THE COTE D'AZUR	7-10	119
THE CAMARGUE	7-10	115
LANDES	7-10	111
PARIS AND FRENCH and BELGIAN COAST	5-8	102
ALSACE	7-10	108
LOIRE VALLEY	7-10	107
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LAKE GENÈVE	7-10	119
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AUSTRIA		
TIROL	7-10	110
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AUSTRIA & HUNGARY/CZECHOSLOVAKIA		
COMBINED TOUR	10-12	172
SPAIN		
COSTA BRAVA	8-10	109
COSTA DORADA	8-10	110
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TYROL *	8	143
AUSTRIA/ITALY - 2 CENTRE *	8	175
ITALY		
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NEWS

Strangulation of adult education denied

By Diane Spencer

The Government's record on adult education spending was stoutly defended by Mr Peter Brooke, junior education minister, last week.

Speaking at the annual conference of the Adult Literacy and Basic Skills Unit in London, he said that critics accused the Government of strangling the adult education bodies it funded.

"They say we are bringing about a service which only the rich can benefit from. They say we are concentrating on the vocational to the exclusion of liberal studies."

But the Department of Education and Science's adult education budget was planned to rise from £12.9m in 1983-4 to £15.8m in 1985-6: an increase of 22.5 per cent.

In the five years since the Tories returned to power, grants to the Workers' Educational Association doubled whereas the retail price index had risen by less than 50 per cent, he said. "If this is strangulation the word must be taking on a whole new meaning."

"We are reigning back a little on grants to the WEA and extra-mural departments - but in a way which should protect the level of activity, provided organizers adopt a creative

and constructive approach to the challenge."

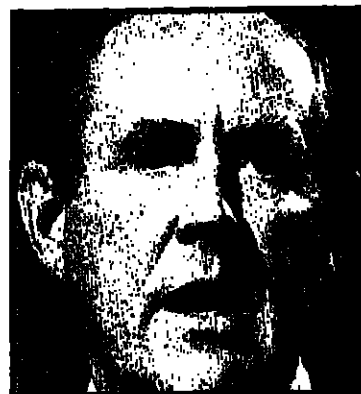
Mr Brooke said he would be dismayed if only the well-off could attend adult education classes. But the present average fee of 50 to 60p-an-hour was "pretty modest".

"I cannot believe that the average family could not afford significantly more if they could be convinced that these classes were worth spending their money on. You know adult education is good value for money. I know it. Those already attending know it. Organizers have to convince many more people of the fact."

"They must adopt flexible fee arrangements that will achieve more adequate contributions from those who can afford it and make appropriate concessions to those who cannot."

He denied that the Government favoured vocational adult education at the expense of non-vocational. Initiatives like PICKUP (Professional Industrial and Commercial Updating) were additional to, rather than a replacement for, liberal arts education.

At a press conference after his speech, Mr Brooke said he had not yet been convinced that the Government



Peter Brooke

grant to the Educational Centres Association should be restored.

But he was aware that some of his Conservative colleagues had called for this week's adjournment debate on the subject and said he would be happy to answer his critics.

The ECA's annual grant of around £18,000 was asked earlier this year amid protests from the adult education world.

The director of ALBSU, Mr Alan Wells, told the conference that in some

parts of the country students seeking help in basic skills were "confronted by a hurdle race in a Hampton Court maze".

Although there was a need for local autonomy in providing basic education, he was concerned at the disparity of provision in different parts of the country.

ALBSU's future strategy would be to sponsor local development projects aimed at helping i.e.s. and voluntary bodies to adopt some of the initiatives the unit had pioneered in the past five years.

Mr Wells expressed some disappointment that the Government had not been as generous towards the unit as he had hoped. "But, like Oliver we shall continue to ask regularly for more, both nationally and locally, until the incomes made available match the considerable need," he said.

● The Inner London Education Authority is raising fees for adult education courses by £2 in September. The cost of a standard course of 20 weekly two-hour classes will be £22. Students living outside inner London will carry on paying one and a half times the ILEA residents' rate - £33.

Row over allocation of ILEA seats

by Richard Garner

Representatives of four teachers' unions last week walked out of a meeting with Labour leaders of the London Education Authority, refusing to hold further discussions with the authority until a non-teacher representation on ILEA received.

The row, which has been simmering for years, came to a head when two nominations for teacher representatives, put forward by the Teachers' Union of Teachers, were considered.

Teachers have previously allowed three representatives - from the NUT, while the other four organizations have not been able to agree on a candidate.

However, a formal ballot took place between all five unions - NUT, the National Association of Schoolmasters/Union of Teachers, the Assistant Masters' Association, the Head Teachers' Association and the Secondary Heads Association.

Under it, the number of teacher representatives would be reduced from three to six - with the NUT having three and the NASUT, AMMA and the headteachers' organizations one each. However, Mr Peter Herbert, general secretary of the London Federation of Teachers' Unions, did not think his union would go back to the standing ILEA advisory committee until the row was settled.

Mr Mike Kay, London secretary of AMMA, said he would attend the next meeting but would walk out if no progress was reported on resolving the dispute.

Meanwhile, the two ILEA nominations for the full education committee have strengthened the vote of the NUT on the authority. The nominees are Ms Grania Mullen, Ms Vanessa Wiseman, both of the NUT, and Mr Colin Yardley, representing the NUT with his former leadership of ILEA and Bob Richardson, has not been elected this year.

Mr John Crawford, chief education officer, is now seeking legal advice on whether the payments were legal. The council is also looking for a means of reclaiming the money.

Redbridge waters down selective plan

Redbridge Council has adopted a watered-down version of the controversial reorganization plan that was designed to merge the borough's two selective schools.

The Conservative-controlled council has asked Sir Keith Joseph, Education Secretary, to approve the closure of two comprehensive schools and the opening of a new selective school.

Mr Brian Smith, formerly of the Royal Army Educational Corps, has been appointed Secretary to the West Midlands Examinations Board.

Mr Ashley Bramall to be chairman of the Inner London Education Authority for the year, and Mr Balu Gnanapragasam, Southwark Borough Council's representative on the ILEA, to be vice-chairman.

July 11-13 Annual Conference for Overseas Students Affairs at Bradford and Ilkley College. The theme is "Overseas Students - What's New?" Details from the Conference Secretary, UKCOSA, 60 Westbourne Grove, London W2.

July 12-14 International Congress on Languages in Education at York on Language and Language and Languages. Speakers include Miss Sheila Brown, Miss Yvonne Martin, and Dr Christopher Brumfit. A limited number of places will be available for private participants. Details from the Centre for Information on Language Teaching and

August 6-12 English Schools Cycling Association coaching/holiday week for school children based on the Lydden Circuit, Dover, Kent. The fee of £65 covers accommodation, food and tuition. Application forms available from ECSA national coach, Mr G Greenfield, 157 Kingsclere Avenue, Weston, Southampton SO2 9UR, or Mrs L Crockett, 29 Lyndhurst Road, River Down, Please enclose a stamped addressed envelope when writing.

Formula seen as alternative to O levels and CSEs MSC sets out skills list

The Manpower Services Commission this week unveiled its new, wide-ranging formula for assessing practical skills. It claims that its system could provide an alternative to O levels and CSE, as well as the basis for Youth Training Scheme certification and the assessment of adult training.

The commission has produced an inventory of 103 generic skills which it believes underlie the performance of almost all tasks at work and in many other practical activities. It was conceived and is being developed as an urgently-needed instrument for controlling the quality of YTS programmes, but the commission's officials say it can be used for people of all ages and abilities over a wide range of work-related tasks.

Preliminary work has already begun with the Royal Society of Arts, the Southern Regional Examinations Board for CSE, the Yorkshire and Humberside Association for Further and Higher Education, and the Scottish Education Department on developing national standards linking the new core of skills to specific occupational tasks.

Meanwhile, it will be used experimentally and refined within the YTS.

The 103 skills are classified into 14 core skill groups covering number, communication, problem-solving and the practical.

They are: Number: Operating with numbers, Interpreting numerical and related information, Estimating, Measuring and marking out, Recognizing cost and value.

Communication: Finding out information and interpreting instructions, Providing information, Working with people.

Problem-solving: Planning, Determining and revising courses of action, Decision-making, Choosing between alternatives, Monitoring, Keeping track of progress and checking.

Practical: Preparing for activity, Carrying it out, Finishing it off.

The four areas are already supposed to be covered in all YTS trainees' programmes, although they have not until now been broken down into the component skills.

Some of the champions of the occupational training family concept, which is based on the idea that skills learned in one job can readily be transferred to many others, and which the MSC has been strongly advocating, have in the past denied that generic skills exist.

Missing from the new inventory is the fifth of the present YTS core areas, information technology, which was added last year with the strong encouragement of the Further Education Unit. The commission's officials have decided that this is not really part of

the common generic framework but specialized learning.

The Youth Training Board have not yet discussed the new system, but their advisory group on contents and standards, which is regarded as the final arbiter of YTS quality, was consulted early in its development.

The project is being paid for by a £500,000 a year grant from the EEC's European Social Fund as a study to investigate "the introduction of assessable core skills/competency modules into YTS programmes and the use of some form of profile recording to identify the portfolio of skills, knowledge, and experience (including standards) possessed by the trainees at the end of the programme".

The MSC regards it, however, not simply as the basis for an effective system of certification but as the key to improving YTS quality: confronted with the near-impossibility of exercising any really effective supervision over the training of hundreds of thousands of youngsters, its officials argue that the answer is to judge the training by its results.

Dr George Tolley, head of the MSC's quality control branch, who presented the new system to representatives of the validating and examining bodies on Tuesday, told them that, unlike previous education-based cores, it could not be taught or assessed as single classroom subjects, but only in the context of carrying out purposeful tasks whether at work or outside it. "It will form the central part of certification in YTS and could in time provide a work-based alternative to O levels and CSE for progression into further education and employment", he said.

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SCHOOL TO WORK

Union to force more cash for YTS allowance

Local authorities and some of the biggest of the nationalized industries will be forced to pay their Youth Training Scheme trainees well over the standard £25 a week allowance under a plan drawn up by the local government officers' union, NALGO.

The union's leaders are to ask its annual conference next month to ban cooperation in any YTS schemes that do not top up the allowance.

Under YTS rules, NALGO approval is required for YTS schemes in council and gas, electricity, and water board offices, as well as hospital and university administrations. And, in practice, most YTS projects run by these organizations, whether or not they are in their own offices, require the cooperation of administrators who belong to NALGO.

The move, if it is authorized by the conference, will be the first serious attempt by a big union to push up the allowance in this way. Although the TUC has encouraged unions to negotiate topping up, and some have done so, none of them has so far tried to enforce it on the scale NALGO is contemplating.

The conference is unlikely to reject the recommendations, since last year it voted to go even further and insist that all YTS trainees be paid "the rate for the job" - the normal starting pay in their occupations. The executive will explain that this has turned out to be unenforceable either because it means unrealistically high wages - as much as two or three times the standard allowance - or because, as in the case of training workshops and other projects set up specially for the YTS, no ordinary pay scales exist.

Instead, it is recommending that branches should settle for "a significant degree of topping up", pointing out that £33.99 is the tax and national insurance threshold at which trainees get the most benefit in relation to the cost to the employer.

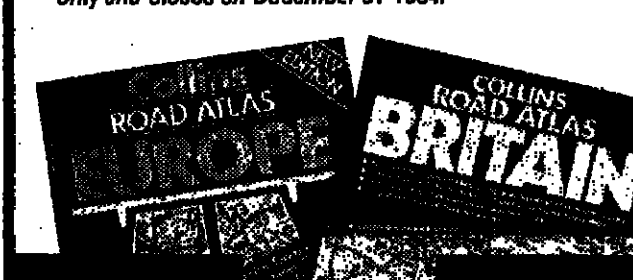
The executive will recommend that the demand for topping up should be applied only to Mode A schemes, where the authorities are acting in the same role as private employers, because it believes that voluntary organizations or colleges running Mode B schemes cannot be expected to find the money to top up the allowance, which is paid directly by the Manpower Services Commission.

The conference will also be asked to call on the TUC to seek immediate improvements to the YTS and, if it fails to get them, to consult its member unions about withdrawing support from the scheme altogether.

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Peace studies critics 'irrational'

by Nick Wood

Opponents of peace studies base their arguments on a number of fallacies, according to a major new book published last week.

Mr Derek Heater, a former teacher and author of a string of books on political education, says the "gut reaction of blanket condemnation" expressed by politicians such as Dr Rhodes Boyson, the former schools minister, is "fundamentally irrational".

"The assertion that schools have no business teaching children about controversial issues such as nuclear weapons is a smokescreen for outlawing lessons that inculcate the 'wrong values', he says.

Those who take this line are really trying to ensure that only their views about sensitive subjects are aired in the classroom, usually through vehicles such as religious studies, English literature and history.

"CND badges worn by teachers are

bad, but cadet uniforms worn by pupils are good; unilateralist literature is bad but Foreign Office literature distributed to schools is good; critical analysis of contemporary British policy is bad, but 'drum and trumpet' versions of nineteenth-century British history are good," he says.

"The honest question is not whether young people's attitudes should be shaped in school, but how."

Mr Heater argues that while a few teachers of peace studies do overstate the mark it is erroneous to equate the subject only stands up if the teacher's intention is to lead his class to adopt a narrowly-christened point of view.

His analysis appears in *Peace through Education*, an account of the history of the Council for Education in World Citizenship, which since its inception in 1939 with the collapse of the League of Nations has sought to assist schools and colleges in giving

young people an international perspective on the world's problems.

The council has recently been through a lean spell. Mr Heater points out. After the break with the United Nations Association in the mid-1970s, it is now dependent on the Department of Education which provides 60 per cent of its income. Over this period it has been forced to cut its staff and to move several times to cheaper offices.

Services have been largely confined to organizing conferences and visiting speakers and shortages of money have limited the supply of teaching materials with international affairs.

Other organizations have tended to move into the gap left by the CEWC. Nevertheless, 2,000 schools and colleges are members of CEWC - an all-time high.

Peace through Education, by Derek Heater. Published by Falmer Press. Price £14.99.

Compensation for meals staff

The Birmingham dinner ladies' dispute, which seemed to have been settled by the arrival of a new Labour city council, took a new twist this week with the discovery that some of the women have already received lump sum payments for accepting new working conditions.

The 5,000 meals staff were told by the former Conservative administration to accept a pay cut or face dismissal. But last month a High Court judge ruled the council was breaking the law, and the newly-elected Labour council subsequently gave the women a reprieve.

However, this week it was revealed that 912 of the meals staff had already received lump sum payments of about £50 each.

Mr John Crawford, chief education officer, is now seeking legal advice on whether the payments were legal. The council is also looking for a means of reclaiming the money.

Carpeted for floor bazards

Two small private day schools have been criticized by HMI for shortcomings in their premises and facilities.

At The Goddard School in Swindon, Wiltshire, housed in buildings once used by Swindon Boys' High, physical education took place in a hall carrying a disqualification order and there were a number of other potential hazards, for instance unfixed carpets, a badly positioned power point and a steep narrow stairway.

Schemes of work in reception, infants and senior classes tended to be too narrow, HMI says, and they point to an "urgent need" to co-ordinate the curriculum.

Standards of work varied widely, they say. All sections of the school achieved some good work, especially the junior class and senior forms studying home economics and drama; but there were also striking weaknesses, notably in senior science and French.

HMI are more complimentary about Twytross House School in Leicestershire in spite of stumbling across a potentially dangerous assembly hall carpet and balcony.

The school has laid a foundation for "effective learning" and children worked hard in their lessons, which were well prepared.

It should build on this good start by broadening its curriculum to achieve its goal of an academic, liberal education, the inspectors say.

The inspectors deliver widely differing verdicts on two schools for children with learning difficulties.

At College Park School in Paddington, run by the Inner London Education Authority, they found "misbehaviour, noise, internal truancy and general turbulence" in contrast to the

sense of "organized calm" prevailing at Billing Brook School in Northampton.

HMI attribute the failings of the London school to the lack of outside help available to staff. "There is evident need for a major input of advice and guidance to enable staff to determine more effective methods of organization, of day-to-day classroom management and of developing planned experiences for pupils based upon detailed assessment of their needs," they say.

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learning environment", especially in basic subjects. Links with outside agencies are "excellent", they say.

Wensleydale comprehensive school in North Yorkshire is troubled by its teachers' lack of confidence in the senior staff, the inspectors say.

But in spite of this difficulty the school has few disciplinary problems and has been successful in offering a broad and balanced curriculum for its 526 pupils.

HMI say that the school's management should be tightened to ensure clearer policies on marking, pupil assessment, the allocation of resources among departments and the strengthening of cross-curricular themes such as health education.

A "formidable task" lies ahead as its numbers fall, and this will only be discharged if relationships between the head and the staff are improved, the inspectors say.

The 838-pupil Dagenham Priory comprehensive, spread over two "bleak and uninviting" sites, has made commendable progress in dealing with many social problems, but overall the standards of work are low, HMI say. English and science aside, the curriculum needs improvement.

The head is urged to draw upon the talents of his staff, in particular the expertise and interest of many able young teachers, to generate policies that will offer an "interesting and stimulating environment" for pupils.

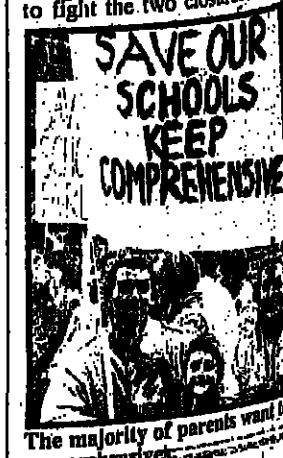
Pupils at Windy Nook junior school in Gateshead are very well-behaved, friendly and helpful but their general level of achievement is low, HMI say. "Too much time is given to rote learning and not enough to lessons in which children can extend their written



HMI reports are available free of charge from the Department of Education and Science, Publications Despatch Centre, Honey Pot Lane, Stanmore, Middlesex HA7 1AZ. Also available from L.E.A.s.

Standards of work and behaviour differed markedly within the school, they say. "Some groups worked effectively while others disintegrated into the unhelpfulness of boredom."

The staff are competent but they need help from their head and the authority's support services. "The inspectors commend the 'initiative' approach of the Northampton teachers and praise the way relationships they have built up with their pupils within a clearly structured



The majority of parents want to save their schools.

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Reagan angers union by putting brake on bussing

UNITED STATES

Peter David on why teachers believe the Administration is dragging its feet over desegregation.

Thirty years after the Supreme Court declared segregated education illegal, fierce emotional arguments about bussing continue to cause political tensions in the United States.

In Washington recently America's biggest teachers' union, the National Education Association, marked the anniversary of the court's famous 1954 ruling with a bitter attack on President Reagan for trying to turn back the clock on racial integration.

Mrs Mary Harwood Furell, the black president of the NEA, said that for nearly 30 years Democratic and Republican Presidents alike had accepted responsibility for enforcing laws against segregation in education. But the Reagan Administration, she claimed, had dragged its feet "and in some instances even stepped backwards".

The so-called Brown decision of 1954 was a turning point in American social history and led to the dismantling of the legally segregated school systems that operated throughout the South.

Linda Brown was a black primary schoolgirl in Topeka, Kansas, who had to travel by bus to the Monroe elementary school two miles from her home because the nearby Sumner elementary school was reserved for white children.

Her father brought a joint legal action with other black parents and the Supreme Court finally ruled that separate educational facilities for blacks were "inherently unequal" and a violation of the Constitution.

For the first 10 years, opposition to integration in the South was determined and violent. In 1957 President Eisenhower had to send paratroopers to the Little Rock high school in Arkansas to escort black pupils through angry white mobs.

Today, most Southern schools have been effectively integrated, although a high proportion of black children in



Flashback to 1957: paratroopers lead away one of the Little Rock demonstrators.

other parts of the United States still attend predominantly black schools and many whites have migrated to the private sector.

The latest Federal Government figures show that in 1980, 62 per cent of non-white pupils went to schools in which they were the ethnic majority, while just over a third of non-whites attended schools where the races were evenly mixed. The figures, though, can be misleading. Today, many black children attend schools that are largely black because of population patterns rather than because of segregation.

Few Americans still believe that the schools should never have been integrated, but many claim that the price of integration was too high and that some of the methods, such as court-ordered bussing, have added to racial frictions and damaged academic standards. More than 400 school districts are still under court orders to implement federally-approved integration plans, and opposition to mandatory bussing remains strong.

The Reagan Administration, for example, believes compulsory bussing is no longer necessary to desegregate education, and in several celebrated cases its lawyers have called instead for voluntary desegregation plans based on luring parents of all races to neighbourhood "magnet" schools spe-

cializing in high demand subjects. According to the NEA, however, countless communities have tried to find their schools unable to maintain and improve standards while integrating racial groups.

To prove its point, the annual week issued a detailed study of progress made by three representative communities in North Carolina, Texas and Washington. It argued in all three cases both black and white children have improved their educational performance.

The Charlotte-Mecklenburg district in North Carolina was held to be held by a court to use bussing to end racial segregation. The NEA claims that despite years of anti-bussing violence in the years, the district's 100 schools harmoniously integrated and scores on the scholastic aptitude have improved.

In 1980 the school district of Texas, was ordered to begin a bussing plan which involved moving more than 12,000 children to their neighbourhoods and resettle 1,000 teachers. Since then, the district's attendance rate at schools has increased, overall test scores improved and black and white pupils have started to catch up in their white classrooms.

Seattle, Washington, has even more complex bussing plans. In 1978, when the NEA eliminated racial and ethnic differences in all the city's schools, enrolments have declined - a degree of "white flight" has integrated schools - the district's scores have improved.

In all three cases, the union's strong Federal support was an integral ingredient of success. It was Reagan Administration's charge that bussing does not work has angered some local officials and progress towards desegregation.

There is some evidence, however, that a number of black groups, including the NAACP, the Urban League and the National Urban League, have been successful in getting bussing as much as the NEA. One such group, the National Urban League, has helped black parents who have been successful in getting bussing as much as the NEA.

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Teacher jailed for milking the system

FRANCE

Mary Follain on a cash claim that was never checked

A teacher at a small, Catholic primary school near Boulogne-sur-Mer has been sentenced to three years' imprisonment after claiming large subsidies from the French milk office for vast quantities of milk. The milk was said to have been drunk by children during leisure activities outside school hours.

In two years, the Forma, an organization which attempts to control the market for agricultural produce, paid him Fr4,425,489 (approximately £717,000), a subsidy for milk drunk by about 40,000 children, as large as that given to the whole of Paris.

M Daniel Telliez, by all accounts a dedicated teacher, willingly gave up his free time to take part in holiday clubs with names like "Holidays and joy" and "Flower of the snows", until he was expelled from the second because of his divorce in 1981.

He then formed his own association, "Holidays, Leisure and Open Air", and in September of the same year, sent his first claim to the milk office. As part of a campaign started in the early 1950s to persuade French school children to drink more milk, the government encourages its consumption in leisure association like M Telliez's. The Forma, which channels EEC money through French administration, pays out Fr2.60 (22p) for every litre of milk drunk by children in holiday clubs.

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OVERSEAS

Poor tutors may be sued

AUSTRALIA

Luis Garcia reports on a tough line on standards it is suggested pupils in independent schools might take

Teachers in Australian independent schools have been warned that they could be sued by their pupils for incompetence or negligence.

The warning has come from two highly respected sources: Mr Vic Gleeson, an author and lecturer who is a recognized expert in the field, and Justice Michael Kirby, chairman of the Australian Law Reform Commission.

According to Mr Gleeson, both teachers and their schools could be legally liable to pay damages to stu-

dents if staff are found to be guilty of "negligence".

He said that while no such case had ever been tested before an Australian court, there were several examples in the United States.

And Justice Kirby said that as schools had a duty to guard students' physical welfare, it was "logical" that they also be liable for other injuries.

Nevertheless, Australian law at present did not appear to provide "effective remedies" for injury to a pupil through poor teaching or administrative negligence.

"At least in respect of education in government schools, there may be no legally enforceable duty to the child or his parents that can be brought home by legal action against the Minister personally, the Department, the teachers or the Crown," he said.

"On the other hand, in the case of private schools, there may be a legally enforceable duty."

Mr Gleeson gave two possible reasons for which legal action could be brought against a teacher:

□ If the teacher was negligent in counselling a student on the course requirements needed to enrol in a university or tertiary college.

□ If the teacher gave students the wrong advice, such as telling them to study the wrong textbook or novel in preparation for the Higher School Certificate (or leaving certificate).

He said it would be very difficult for the courts to determine the appropriate level of damages, but that a rebate of all school fees in the case of an independent school would be the least part of any demands for compensation.

Schools in Australia had been sued for negligence in the past, but not on academic grounds. These cases have concerned the pastoral care of students, for example during school excursions and field trips.

Train course

BELGIUM

About 60 commuters on the line from Mons to Brussels are willing away their 40-minute morning journey by studying languages, according to the Belgian railway company, the SNCB.

A first in Belgium, and probably on the Continent, the two-month experimental scheme was introduced at the beginning of May. Two teachers, using textbooks, newspapers and cassettes as well as conversation in small groups, run classes in Flemish and English.

With a satisfying 20 per cent of the regular commuters registered for the course, the organizers are thinking of offering similar classes to commuters from Liege to Brussels.

Schools shut by cuts strike

A national strike in Belgium's catholic secondary schools on May 14 was the opening battle in what is likely to be a long conflict between Government and teachers over education cuts.

The cuts were part of the three-year austerity programme passed by the Centre-Right Government before losing its special powers at the end of March. Teachers are particularly angry about plans to increase their working week by one hour, to force them to choose between retirement and part-time work on reaching the age of 62, and to replace school cleaning staff by private cleaning companies.

State school staff did not strike this time since their union, the Socialist CGSPN, sees resistance to the 3.5 per cent education cuts as part of the overall struggle against Government policy. Union members in the schools, therefore, took part in the general strikes rather than act solely on the education measures.

The Government measures will also mean thousands of temporary teachers being laid off, and cut-backs in all non-compulsory classes such as music and PE.

Anne Good

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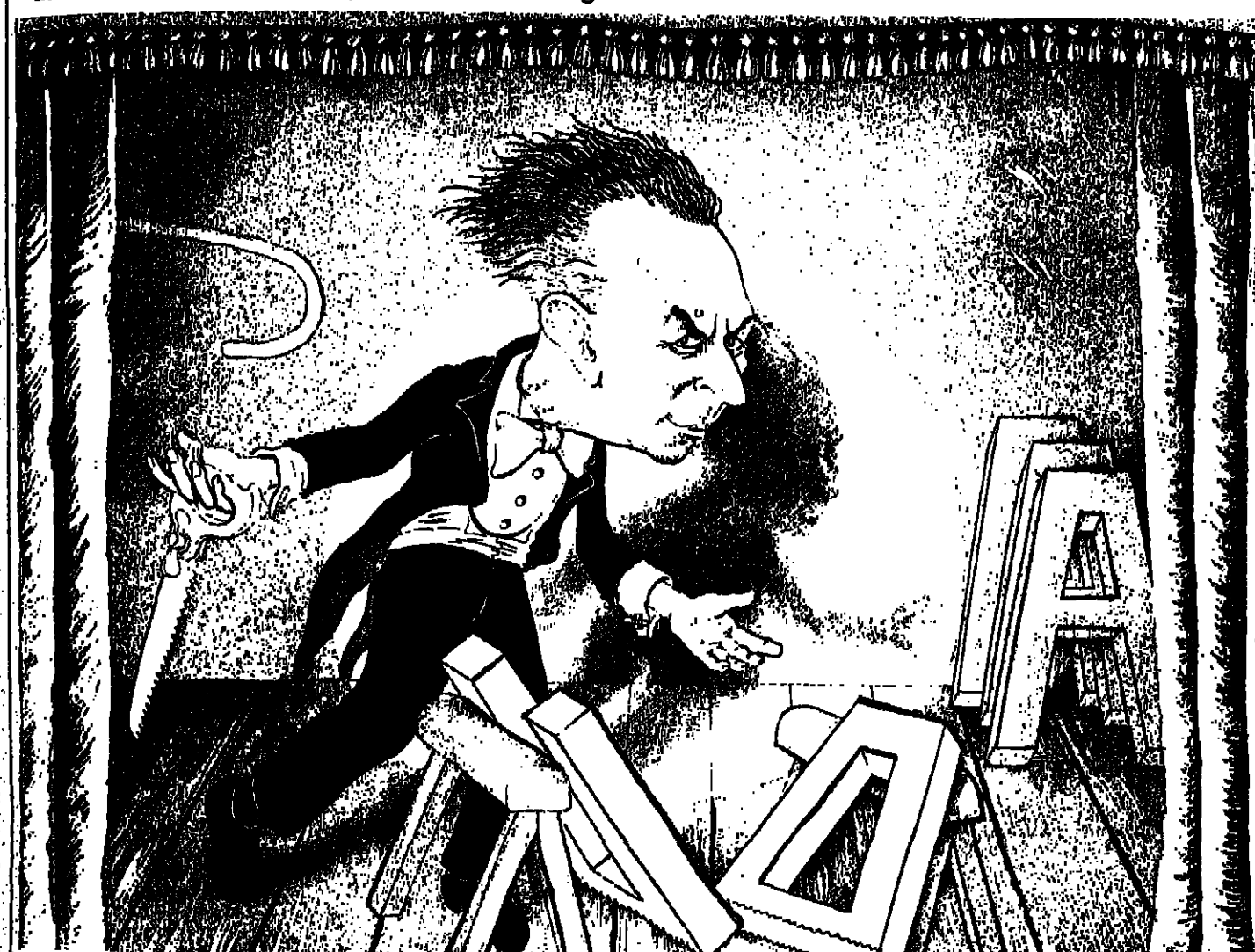
MARTIN LONEY

Jack Cross looks at the impact in the classroom of Bradford's controversial race policies



'For my next trick...

The new AS levels conjured up by Sir Keith Joseph are an irrelevant diversion, Patrick Scott argues.



**'The implication is that
A levels have
so little coherence
that they can
be chopped in half'**

'The CPVE tackles all the issues in 16 to 19 education that the AS proposals ignore'

Patrick Scott is the Director of the Durham Sixth Form Centre. The documents referred to are: AS Levels proposals by the Secretaries of State for Education and Science and Wales for a broader curriculum for A level students, published by the DES and Welsh Office May 1984 and The Certificate of Pre-Vocational Education Consultative Document, published by the Joint Board for Pre-Vocational Education May 1984.

TEATRE FILMS TELE S ON ART MUSIC BOOKS BOOKS BOOI RCD S BO S SION ART MUSIC TH A R FIL AS

Putting the poor on show

by Frank Field

Wigan Pier Revisited. By Beatrix Campbell. Virago £4.50.

The title is no mere pun for the author invites comparison with the original. "As the thirties was our last great depression it commands comparison with the great depression of the eighties." How well does *Wigan Pier Revisited* stand up to this self-invited comparison?

While Beatrix Campbell's book is unlikely to have the same impact as Orwell's this is not totally the author's fault. Not only have many writers followed the Orwell tradition of social reporting—thereby somewhat lessening the effect—but for the past 20 years we have lived in the age of the television documentary and news report. Few of the programmes are made around the poor speaking for themselves. This is extraordinary, as the poor possess more knowledge about poverty than anyone else.

Instead, the poor are exhibited and allowed into programmes on poverty only in the role of link pieces between other people munching phrases about them. Despite all her commitment, Beatrix Campbell doesn't let the poor take over either. It is her story, her observations and their comments are fitted in. And where they don't fit Beatrix Campbell's theme they don't appear.

The same kind of imperialism which stalks most other writings about the poor is here too—though in much smaller quantities. The rules appear to be that the poor can be asked literally anything about their private lives. Why, for instance, is it important to be told that single mums don't masturbate? The "God, no," "never," "what d'ya mean" type of response is naturally given. None of the single men was asked the same question. Why? Was Beatrix Campbell worried about getting punched if she asked these questions of other, less vulnerable people? Clearly some new rules need to be established.

The left has no greater prerogative to put their sticky fingers into other people's private lives. Poor people too have a right to silence. Why keep pushing the same question at those young girls reported here who clearly don't want to talk about themselves? Don't the poor have the same right to keep their thoughts, hurts and fears to themselves if they want to? Some things are so hurtful that one cannot, or dare not, admit them to oneself let alone blurt them out to an interviewer who will never appear again.

All too often books about the poor exude mateyness and this volume is no exception. What is so fundamentally false about this approach is that true mateyness has to be based on a friendship lasting longer than the casual interview, and the poor, who aren't daft, know it.

You wouldn't go around Eaton Square asking impertinent questions, and talking to the inhabitants as though you had known them all your life; and if you were silly enough to try you'd soon get the bums' rush. Conduct which is unacceptable to the inhabitants of Eaton Square is unacceptable to the poor too. The poor are poor solely and simply because they have far less money than the rest of us. In all other respects, and in some cases more so, they have a claim to equal respect stemming from their importance as individuals.

This false mateyness not only insults the poor but also leads to a weird kind of social reporting. I don't doubt Beatrix Campbell when she writes of never having met a claimant who could afford a

television licence. But what Campbell reports in a spirit of camaraderie will be viewed by many of the poor (and others) as just another example of the ease at which some of the middle classes are suckers for the soft sell.

Many, many poor people do buy television licences and are proud of being able to do so. It often means going without enough food, or adequate heating, or both, but paying your way and managing your debts (just as other people manage their bank overdrafts and mortgage repayments) is part of what keeping your self respect is all about. Of course it's true to say that in the end poverty all too often destroys self respect; that is why it is an evil which should be opposed with all our strength. But this final outcome is one which most poor people in my experience fight hard and long to avoid.

Despite these criticisms, which can be made of most books written about the poor, Beatrix Campbell's revisiting has its very successful sides, because of the way it is both like and unlike the original book. It is similar to Orwell in that both authors set out with a list of contacts: both books give the distinct feeling of treading carefully through the areas visited. Orwell had his ILP contacts but, as Bernard Crick recalls in his impressive biography, Orwell's lust for the bottom of the heap, which he found in the worst kind of cheap lodging house, helped to balance up the range of contacts made. At the same time it also made his portrait of the working class (who made up a large part of the poor then) very unrepresentative indeed.

Beatrix Campbell also appears to have relied on a set of contacts. But whereas practically the whole of Orwell's book is his interpretation of the events he witnesses, Beatrix Campbell's is not. All too much of the revisiting results in a weaving together of the interviews. Yet even this technique allows Campbell enough room to fashion phrases and comments which stand equally proud alongside any of Orwell's. "Now, as then, the compass of consensus quivers and makes a dash for the Right" is just one of many such comments.

Another difference between Orwell and Campbell is the latter's Marxism. Orwell once described how an account of the English class system expounded by an orthodox Communist was "like watching someone carve a roast duck with a chopper". Does Beatrix Campbell's Marxism take on the role of "chopper" to Orwell's roast duck, or does it act as does a barium meal to an x-ray, highlighting the most vulnerable points in the system?

It is one of the successes of this book that the political luggage doesn't take over from the journey. Indeed, at most points her Marxist standpoint strengthens what is written and it helps to fashion one of the best sections of the book. Here Beatrix Campbell is concerned with the question of redundancy and that feeling of powerlessness that individuals have when multinational companies snatch away the right to work.

Then again there is a powerful section on the truly liberalizing effect council house sales can have. The argument needs quoting at some length:

But amidst this tale of decline and dereliction (in the inner city) there are lavens of optimism, half-way houses to heaven. There's a block of maisonettes in one of Coventry's

most notoriously 'rough' estates... As you walk through the door... you see something that exists nowhere else: a secret garden. There is an immaculately manicured lawn, a little pond surrounded by rushes, a high wall with young trees and creepers climbing towards the wire netting at the top, beds of flowers, and, by some of the front doors, there have been gorges out of the poverty and clematis and creepers planted.

These maisonettes were sold by a Tory councillor for less than £2,000 and bought mainly by Labour voters. "Single mothers and divorced women to buy accommodation at market value or to accommodate through the housing list," Beatrix Campbell continues,

They contribute a small sum every week to buy the plants, build the pond and buy a lawnmower and two church benches, and make their collective garden themselves. The majority are now unemployed, some are few, but they can manage 50p a week to the garden, and for many of them it is the only pleasure they have in life.

Nothing, other than ownership of a secret garden, appears to distinguish them from the other tenants around them. But is everything. (Italics added.)

Any writer, who can describe what she sees and feels like this, is someone to be valued, when the writer is expressing views so well expected from a Communist Party member, the more remarkable.

By far and away the best section, best sense—in the way it is written, as well as in the way it is the chapter on the women's refuge—shorter than the other sections, has far fewer interviews and, best of all, has more of Beatrix Campbell and of what makes her angry. Her authority thinking of not supporting a refuge by women themselves, or of attempting to do one, ought first to read this chapter. Think, say that these refugees can cater for all women suffering violence from their husbands (but not women are repelled by them) but not a nevertheless meet the needs of some.

One thing you couldn't accuse Orwell of being a feminist. Does Beatrix Campbell's feminism add or detract from *Wigan Pier Revisited*? Without a doubt it helps to make the book succeed it is. While there are what appear to be obligatory heavy sister comments in the book, Beatrix Campbell writes not only of the effect of sexism on the life of women, but also on men. And if anyone disbelieves this, just read the section on redundancy. "...unemployment, men means their exclusion not only from work but from the environment that makes them reform. ... so that women are no longer believed to be de-feminized by working for men. Masculinity has remained relatively unstructured. Men's tragedy is that unemployment makes them feel unmanly."

From what I see in my constituency I think Beatrix Campbell may have been right on this but is less so as time goes on. Unemployment having a bigger effect in breaking down barriers than this book allows for. A wage respondent as Mandy Rice Davies did, "I would say that, wouldn't he?" Not for the first time hope the wag is wrong.

"...something that exists nowhere else—a secret garden"

Black comedy

Black Ball Game. By Don Webb. Lyric Theatre, Hammersmith. *The Comedy of Errors*. By William Shakespeare. RSC Barbican Theatre. *Pygmalion*. By George Bernard Shaw. Shaftesbury Theatre.

Black Ball Game is a serious comedy about racial prejudice. Previously produced at the Tricycle Theatre and now rewritten, it deserves its new lease of life. The scene is the conference room of a large hotel. (Roger Glossop's company operates Sales Managers' Training Courses. They are on the brink of landing a huge contract from an international concern led by a Mr O'Rourke.)

John wakes up in a stupor amid the debris of last night's obscenely rowdy end-of-course party. Enter Mary, the hotel's Conference Manager, to reveal plot and sub-plot: the company's racketeering and the hotel's suspicions, their sexual involvement, his drunken impotence. Des, the front man, enters briefly to inject urgency. On comes Harry, a personable, eager young salesman. Despite Harry's obvious talents, John refuses even to consider accepting him on a training course, explaining that ordinariness is the hallmark of a good salesman—someone who doesn't stand out—and Harry is black. It sounds reasonable until Harry reasons why with two A levels, and excellent track record, apparently AI suitability on paper, he has failed to get short-listed for five jobs because he couldn't change colour.

Harry's doggedness gets him to the interview with Des, whose controlled rage finally explodes in an ugly stream of racist abuse and physical violence. John devises a formula whereby Harry is presented as the best potential salesman to Mr O'Rourke—an empty gesture presenting the company as liberalist without giving him a job. Panic when O'Rourke proves to be a black African: Des bunks off with company funds; Harry gets a different offer from O'Rourke and is sent to hire John.

It is all rather schematic. Some scenes might have been written with a playwrighting primer in hand. O'Rourke's presence is too heavily underlined; he is brought on too soon for maximum effect. Nevertheless it is funny, pertinent, up to the minute theatre. Mistaken identities abound in *A Comedy of Errors*, "possibly Shakespeare's earliest play". Adrian Noble's clown-kaleidoscope production makes mistake plausible by having identical clowns for Dromios and identical blue-faced Antipholuses both sober-sulted with Al Jolson's white gloves. In Uitz's designs everyone except the Abbess is a clown; a window-cleaner's cradle does for a balcony and an upstairs room; a stage-trap passes for a brothel; a door-fitter establishes both indoors and out. This keeps the play moving almost at silent film speed and clears the way for slapstick gags, clown routines. Despite initial doubts, the play survives the clown's onslaughts. It is good company stuff, joyful, and those who find Shakespeare boring. Those who find Shaw a bore may be

Music for sharing

Inspector Quaver's Musical Case. By Charles Shartman-Cox and Jack Barber. The Pearl. By Eric James. Palace-Ground, the Schools' Tour Group from the Palace Theatre Centre, Westfield, Heycourt County Primary School, Leigh-on-Sea.

Inspector Quaver's Musical Case is a jolly and attractive play with music for eight to eleven-year-olds. It uses pantomime techniques to draw the initial interest of its audience who are only too happy to tell Inspector Quaver where his hat is or learn "The Pom-Pom Song". There is the requisite animal—Presto, the Professor's dog—and the requisite villain, Doctor Dischord (sic), who has a love of music, or at least on other people enjoying it. The plot is slight,

with the Doctor's dastardliness limited to pinching the music machine and tying up Presto. Once caught he quickly agrees to be taught to enjoy music.

Somewhere in the play is embedded a message about music being for sharing and sharing being a Good Thing. It's a point borne out by the ending in which the audience becomes a choir and percussion orchestra in a massed and joyous rendition of "The Pom-Pom Song".

Less successful is *The Pearl*, for eight to eleven-year-olds. Far from solving all his problems, the discovery of the "Pearl of the World" brings only disaster and misery on Kino and his family. In a rather muddled way *The Pearl* is saying something about the value of possessions (the pearl itself is subject to market forces and also represents the medicines and educa-

tion Kino longs to give his child) and of knowledge (Kino sees education as intrinsically good, but those who possess it are shown to be intrinsically bad).

It is here that the play becomes confused and confusing and some of the children seemed surprised to see the priest and the doctor, figures normally presented to them as trustworthy and kindly, as the hero's enemies. The hints of Kino's own corruption are only sketchily treated. The undefined cultural milieu, the quaint language and the variable Mexican accents are alienating in a non-useful way, making the reality of the characters' lives less understandable and accessible than it could or perhaps should be.

Jill Burrows

Combined theories

Women and Film. By E Ann Kaplan. Methuen £6.95. 0 416 31750 2. *Benjamin*. By Philip Mosley. Martin Boyars £4.95. 0 7145 2804 8.

Women and Film is one of the six books in the shortlist for the British Film Institute Book Award, to be announced on June 26. Its approach to the topic attempts to combine and reconcile feminism and Freudian psychology some of the theories that Kaplan advances or reviews lead her to generalizations about the pleasure principle in the cinema, the male gaze and the ability of women to express themselves in a male-dominated society in which, while internally consistent,

seem to have little relation to the complexities of the real world or the individuals who make it up.

These doubts tend to disappear, however, when one reads her exemplary analysis of actual films, starting with four Hollywood films by male directors and then examining examples of contemporary feminist cinema in Europe and America. The British reader is fortunate in having had the opportunity to see a number of these recently on television, particularly Channel 4's *Eleventh Hour*. Kaplan's conclusions, too, are sensible and optimistic. Philip Mosley's survey of Benjamin's work up-to, but not including *Fanny and Alexander*, is thorough but pedes-

trian. He starts with a chapter entitled "The Nordic Angle" in which he surveys Bergman's debt to such diverse figures as Strindberg, Hjalmer Borgman and Carl Dreyer much in the spirit of the "Blue Guide" offering the visitor some conversational points on Scandinavian culture. It would have been more apt to relate Bergman's work to that of his early mentor All Sjöberg and the sweeping judgment that Bergman is a "more accomplished artist" than Strindberg is only convincing to the extent that one is prepared to trust Philip Mosley's judgment on such matters.

Robin Buss

ARTS



After the *Wizard of Oz* and *Gypsies and Dolls*, West Side Story must surely be the musical most frequently put on by amateur groups school drama producers and their troupes might profitably make the pilgrimage to Her Majesty's Theatre, Haymarket, to see how Jerome Robbins's classic can turn out when in suitably enthusiastic hands. Tom Abbot, who played a Jet in the original stage production, has brought the show brilliantly to life.

Now pushing 30, it seems in no way a period piece. From the opening scene, silently danced to Bernstein's marvellously sly score, the atmosphere of menace builds up steadily to its tragic conclusion. The real point for amateurs to note is this: in this production, though everybody (well, almost everybody) is good, there are no stars, there is no superhuman charisma. It succeeds because nothing obscures the social passion behind the story, nothing smudges the clarity of the lyrics, nothing dulls the music's razor-sharp edge. Above, Steven Pacey as Tony and Jan Hartley as Maria.

Michael Church

surprised at how much laughter he raises in *Pygmalion* under Ray Cooney's direction. The story of Eliza Doolittle's grooming for deliberate mistaken identity as a Duchess is well known. The play rests on Higgins, Eliza, Doolittle. Jackie Smith-Wood is stridently aggressive as a flower girl, broadly controlled as Miss Doolittle; John Shaw an amiable easygoing Doolittle. Watching Peter O'Toole (Higgins) is seeing acting of another age—that of the actor-manager

audience idol. Full-face on he wows the audience, flings out his arms in romantic gesture, weaves uncertainly about the stage (his legs obeying their own instincts); alternating between whisper and rant he fixes erratically on a single phrase and draws the rapt attention of the house. He excites a sense of danger (as Kean did) and is compulsive viewing—that he is Higgins, or ever could be, I doubt.

John James

Half and half

Something's Burning. By Peter Speyer. Lyric Youth Theatre at the Lyric Theatre, Hammersmith. *Race to be Seen*. Epping Youth Theatre.

It's not what the Lyric Youth Theatre do it's the way that they do it which is so important. Leaving *Something's Burning* I was fired (as I was fired after each of their previous productions) with a new enthusiasm for young people's theatre.

The plot may not have amounted to much, but the honesty and raw intensity with which the show was invested by its half-black, half-white cast more than made up for the repetitiveness and occasional naivety of the script. An everyday story of adolescent anger and frustration with occasional forays into bomb-making and unemployment, it was hardly original stuff. But because it was about them, because Peter Speyer had fashioned the script after talking to and getting to know the actors, because director Lucy Parker has been working with them for several years, somehow all that was unimportant. Out there in the Studio at the Lyric Theatre, Hammersmith there were 14 young people being themselves, presenting stage persons with a practised polish (we could hear, we could see; there was no stageiness anywhere) that would put a lot of the London fringe to shame.

Anthony Lennon ("no relation") stole the show every time he came on with his virtuoso demonstrations of body-popping—that jerky, robot-dancing which is featured in more than one current television commercial—but only because he looked so extraor-

dinary. The rest of the cast were equally good, strutting, rapping and sparring just like young people in any city any evening.

Away from the city in small-town Essex, the Epping Youth Theatre were also getting their own show together. *Race to be Seen* was a documentary with music, researched and written by the company, around the life story of Graham Salmon, the record-breaking blind athlete. And *Charities of Fire* stuff it was too—though unfortunately without Vangelis' music or a script as felicitous as Colin Welland's screenplay.

Documentary dramas are notoriously difficult to put together. Being true to the material, as the Epping group were to the 2,000 pages of interviews they collected, often means weakening the dramatic line, and in *Race to be Seen* this was unfortunately the case. A lot of the dialogue, in particular that to Graham's parents, did sound like interview answers, and there was too much to-audience declamation for us to become really involved with the characters.

What really kept us in our place, however, firmly locked outside the drama, was the style of the production. Inspired by the local SNAP Theatre Company to work entirely without props, EYT substituted crouching figures for real chairs and then sat on them when there wasn't really any need to sit in the first place. (It was difficult to concentrate on what the consultant was saying when his office was full of such grotesque human furniture.)

Minor considerations, however—what is important is that the company have devised an impressive (and impressively well-documented) show that was socially valuable as well as entertaining. They have all had to think through what it means to be blind, and as a result of their work over the past few months have issued an open invitation to any disabled young people to join them.

Hugh David

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The Unbearable Lightness of Being. By Milan Kundera, translated by Michael Heim. Faber £9.50. 0 571 13209 X. The **Joke.** By Milan Kundera, new authorized translation by Michael Heim. Penguin £2.95. 0 14 00 6415 X. Arena Special, Milan Kundera. BBC2 May 19. Book Four, Channel 4, May 20.

A firing squad lines up. As the soldiers go through the familiar routine and countdown to execution, one of the condemned notices that the officer's flies are undone. An interesting thought to take into eternity. On fire there is silence. It has all been a joke. Rifles are lowered, the soldiers laugh and the would-be victims turn away. All except one, who pauses to say, pointing at the officer's open buttons, "Is that what you were going to do to me?" The laughter changes, the officer no longer shares in it. As the prisoners move away, relieved, the squad is called to attention, bolts click, and the countdown this time comes to its expected, violent conclusion.

That, not much more briefly than the original, is Herbert Kundera's "The Wisecrack", published in *Stand* in 1973. It is, if you like, the perfect "East-European" tale. Terse, savage, capricious, black, an indictment of totalitarianism, a brief affirmation of human dignity and humour in the face of the void. It is also completely bogus, contrived, an image of the East concocted by a Westerner (Kundera is an American-born, Czech-born writer). It is precisely the kind of parody that Western readers and critics have tried to read into the work of Milan Kundera.

The Anglo-Saxon literary world is always painfully eager to lionize literary dissidents and exiles and to rewrite their works more or less exclusively as protest, as Baedekers to unfamiliar and unlovely political landscapes. Kundera, at least, is anxious to avoid being labeled as a dissident writer only. It is true that his career has been closely tied with the political history of his native Czechoslovakia. His first novel, *The Joke*, became the literary symbol of Alexander Dubcek's "Prague Spring" and was quickly suppressed during the "normalization" that followed the Russian invasion. In 1975, Kundera left his homeland for France; four years later, in response to the publication (in French) of *The Book of Laughter and Forgetting*, his citizenship was revoked. Kundera is now a non-person in Czechoslovakia, one of the literary "disappeared". Yet given all this, he insists that his work is not to be read, as Westerners seem incapable of avoiding, as a polemic against the new Czech regime. During a television discussion of *The Joke*, it was praised as "a major indictment of Stalinism". Kundera was quick to reply, "Spare me your Stalinism. The

Joke is a love story".

The joke itself, less brutally brutal than Kundera's and far more subtle, emerges in a political guise. A young man, irritated by his girlfriend's Party calisthenics and diligent Stalinism, sends her a postcard: "Optimism is the opium of the people! A healthy atmosphere stinks of stupidity! Long live Trotsky! Ludvik." The terms are political but the intention is not. All the young man cannot bear is the girl's buoyant mood in the face of his desire. A joke. Here, though, there is a complication. The Party knows of the card and Ludvik is hustled off to a labour camp.

Kundera's great theme is the relation between public and private, a relation that makes the sexual leverage of *The Joke* so dangerous. His novels, and particularly his most recent, *The Unbearable Lightness of Being*, are obsessed with images of betrayed intimacy and public display: lost love letters and diaries in *The Book of Laughter and Forgetting*, group sex, nudist beaches; during the invasion of Czechoslovakia in 1968 young girls in microskirts necked passionately with their boyfriends in front of sex-starved Soviet tank crews. Kundera sees that something has shifted under the weight of historical movement. Where once history was merely the backdrop to the individual adventure of private life, now history has become the adventure, the foreground, and private life a banal counterpoint to it.

The lovers in the new novel shift from one to another, imagining in each the faces and bodies of the others, detached from their own bodies, look-

Private lives, public loves

Brian Morton
on the work of
Milan Kundera



ing down from above. Backdrop is the key word. It is a function of our psychological—and ultimately political—health how well or ill we are able to detach individual objects, from the fuzziest of shimmers of their background. Where the normal person sees a cat or a house in a picture, the schizophrenic sees only jumble. Kundera knows that politics is a contrivance, a convenient means of blaming all human ills on an abstraction. War and repression are merely human vices given polite names. History, which is vice rationalized, robs us of our ability to see others as separate people rather than as part of the landscape. There are 800 pages on this in *Satire* if you can stand the jargon. For Sartre and for Immanuel Kant, the Categorical Imperative was that we must treat others as ends, never as means.

Kundera is concerned less with politics than with human nature, not as a moralist, but as a philosopher. In *Lightness*, people are each other's means; foreground and background constantly merge and blur; human reality is always being fixed by someone else. Sabina's paintings are "impeccably realistic" (and thus ideologically sound) but with their realism ruptured by bizarre disruptions of perspective and surface; "the surface, an intelligible lie; underneath, the unintelligible truth".

It is a cliché that from Curtail writing is always about the survival of the individual against the smothering of the collective. Kundera's main setting is Prague. Kafka's city, Prague, sits between West and East, reason

and unreason, Reformation and Counter-Reformation, collective and Romantic ways of ordering the world. It was a city made for Surrealism and the surrealists, in their Communist guise, make an appearance in *The Book of Laughter and Forgetting*. Surrealism, as well as offering revolutionary overthrow of the old established order, offered memory without consciousness (an apparent contradiction) and language without words (another), a language that came straight from the unconscious.

One message of Kundera's work is the difficulty, the near impossibility, of writing in a country which has undergone virtually the entire spectrum of modern history. The Western obsession with writing—"graphomania"—is part of Prague's heritage in so far as Prague is part of the West. But writing is only possible in a country where little happens, where people are reasonably comfortable and isolated in their own homes and selves. Kundera underlines the contradiction by contrasting the demand for letters and diaries, which demand no audience, and the public life of fiction, which insists on one and relies on ambiguity. You can be either a human being or a writer. Intelligible lies; unintelligible truth.

Kafka's heroes didn't fight out a political struggle. They found themselves in the amoral position in which the past could be purged, rewritten or, as in Communist history, brushed out of unacceptable photographs. Kafka, and Kundera, needed a way of retrieving memory in words but somehow out of reach of a language

appropriated and manipulated by the political masters. Kundera's great exile, as he pointed out in his *Four Interviews*, is a double one. He is now forced to write in French which, vital ambiguity, aimed primarily at his fellow Czechs, not at us, are at the hands of translators.

In so far as Western critics under political message from Kundera, to miss his method and thus his meaning. Kundera constantly emphasizes that his books are creative acts; chapter heads are repeated; recapitulations; he uses parallel ideas are presented not literally but motifs; his characters do not "act" (on this he is very insistent); they are *leitmotivs*, parcels of linguistic energy.

Kundera is less interested than temporaries like Josef Skvorecky in jazz, with its pattern of themes, improvisation and its association with European forms like Bach's fugue and Beethoven's late quartets and sonatas. He even makes a joke of the famous "difficult resolution" of the quartet. *Mus ex se?* *Ex mus?* Must it be? — It must be! A metaphysical conclusion? *Relece* to a debt? Or a light-hearted glow musical resolutions? Kundera, like Beethoven, are more playful than like to believe. *Pace Freud*, Kundera believes that our dreams are *poetic* ances, *to be enjoyed*, not to be *dark* secrets. Kundera works level beyond that of ideas; they are in his work as armatures to his narrative. In *Lightness*, Nicolas, myth of the eternal return, is the key: *Eternal in the end, it is the end* once we haven't lived it all. We are trapped in eternal return, then, once becomes an unbearable load. Must it be? It must be!

Music is beyond words. So, to give the act of love a name (even "Was it good?") is to dispense it, dissolve language, into meaningless sounds, denials and affirmations ("nonono yesyesyes"). Like music, sets us free of a language that represents power. It restores the past, older than sex? Without words, history.

In Saturday's *Arena*, they paid service to Kundera's insistence that it is not merely a "dissident-writer" promptly set about reading his work exclusively political terms, even putting back in Michael Bryson's words readings at any moment when a word slipped over into the fantastic. It is the very kind of thing Kundera is writing against, a rhetorical flourish, deadly than joke firing squads and loaded guns. "Those who consider the Devil to be the partisan of Evil, angels to be warriors for Good, are the demagogues of the angels." Kundera is a more profound thinker than the evils of one, hopefully time, political system. What we need to read him, try to ignore the angels whispering at your shoulder.

European tradition without ignoring the peculiarities of either and is sufficiently responsive to feminist criticism to include a number of women artists from Angelica Kauffman to Mary Cassatt. But for all his explanations of individual works, more than Janison, avoids over-scientific evaluation. This, quite decidedly, puts history before art.

Michael Clarke

History before art

Art of the Nineteenth Century: Painting and Sculpture. By Robert Rosenblum and H W Janison. Thames and Hudson £25.00. 0 500 23385 3.

Revivalism is undoubtedly upon us, As Robert Rosenblum makes clear in the preface to his and the late H W Janison's book, this is not one more example of "the twentieth century's hall of nineteenth-century fame", with its apparently inevitable progress from Delacroix to Courbet, Manet to Cézanne, but "the ongoing resurrections of hundreds of nineteenth-century artists: one thought dead and buried forever", like the painters Ary Scheffer, Gleyer, Couture and Bouguereau. As for the sculptors, the change in taste over the last 100 years has been so great that they have required exhumation, despite the innumerable public places their works still occupy.

What the authors have done is to assemble the century's avant-garde alongside those painters and sculptors more highly esteemed and rewarded in their day. By dividing their accounts into clear-cut historical periods and basing their selection on social and cultural changes shared by a wide range of artists, they reveal why Cézanne's "The Birth of Venus" suffered con-

temporary viewers better than Manet's "Olympia" and Onslow Ford's Shelley memorial achieved a spectacular success while Rodin's Balzac monument was rejected. Set into context like this, it is much easier to appreciate what artists as different as Degas and Cézanne were up against.

Unfortunately, the editors have partially undermined the advantages of this approach. Janison's contribution on sculpture has been cut to one third its original length (the complete text will be published later), which not only puts the greater emphasis upon Rodin's longer account of painting, but falsifies the status of each art. More sculpture was produced during the nineteenth century than ever before, occupying almost every public place and almost burying many buildings and pieces of furniture. Given its civic role, it is sculpture not painting that should have dominated. Nevertheless, Janison manages to reverse many common received views and Rosenblum certainly makes much of his greater space.

It is good at now-standard practices like painting the late eighteenth century painter, William Hogues, to Gauguin on the first page and contrasting "Ensaym" "Entry of Christ into Brussels" in 1889" with Wierzb's "Triumph of Christ" of 1848. He easily integrates American painting into the

European tradition without ignoring the peculiarities of either and is sufficiently responsive to feminist criticism to include a number of women artists from Angelica Kauffman to Mary Cassatt. But for all his explanations of individual works, more than Janison, avoids over-scientific evaluation. This, quite decidedly, puts history before art.

Next week

Penelope Fitzgerald on Jean Rhys; Anne Stevenson on V.S. Naipaul; technical books

Jostling the great

Edmund Gosse: A Literary Landscape 1849-1928. By Ann Thwaite. Secker and Warburg £15.00. 0 436 52146 6.

Fascinating the way people find their different ways to immortality. Edmund Gosse, hoping to stake out his plot on Parnassus as a poet, ultimately found a place on the lower slopes with his memoir *Father and Son*. But this is only one book in a vast outpouring: there were, besides, no less than 50 or so works of criticism and biography, and articles beyond number, executed against competition (from full-time jobs held throughout his life).

Mrs Thwaite gives, first, a perspective on *Father and Son*, in which Gosse, writing at nearly 60, sidesteps the facts on occasion as he recreates the struggle for survival against repression by the Plymouth Brethren, a struggle which continued long after he had reached 20 and the book's end. He remained glib, prone, with a compensating hunger for approval which made him prone to flattery both offered and received, and hence his glibility with the forger T J Wise, who was as adept as Gosse himself at currying favour; Mrs Thwaite catches Gosse of anything more than innocent complicity.

But everywhere facts are dug out and thoroughly forced over. She refuses too the notion that Gosse was looking at pornographic photos during Browning's funeral service, and proves conclusively that Virginia Woolf's outrage at his letter to Robbie Ross, in 1895 at the height of the Wilde scandal, is unjustified. About Gosse's own homosexuality she is coolly sensible. His love for Hamo Thorneycroft,



Edmund Gosse with his father

which gave him the four happiest, if often uneasy, years of his life, wasn't consummated, it didn't compromise Gosse's happy marriage, and his homosexual feelings died down in later life. Certainly he was no lifelong secret homosexual as has been generally assumed.

The recorded hostility of Bloomsbury might easily have put Mrs Thwaite on the defensive, but she doesn't plead a case. Against Gosse's exuberant bookishness — "A folio Beaumont and Fletcher tilted against the stomach is a great solace at times" — she sets his "genius for inaccuracy", in Henry James's phrase, which provoked John Thurston Collins' attack on him in 1896 and seriously undermined his claims to be considered a scholar.

And there is his snobbishness. James worried that he was being "doomed to

draughty Dukeries" — others were seething. But addition to Dukes was consonant with his authentic genius for knowing people, and the literary landscape of the apt subtitle is a wondrous one, justifying the 500 packed pages. New in London in the 1860s, young Gosse is soon hobnobbing with the Pre-Raphaelites. Rossetti has recently published the poems buried with Lizzy in Highgate Cemetery, while it is Gosse's love for Swinburne, with his balloon of red hair, which helped release him from any vital relationship with Christ. Tennyson is grandly evoked in the early pages: on the way Gosse spots the newest infant genius Kipling: in the final pages he is linking the Stewells but the Picassos and Modiglianis on their walls are a shock to the great Victorian. By his side throughout this large progress are his contemporaries James and Hardy. Material in abundance for his delightful gift for portraiture.

Mrs Thwaite has ransacked his thousands of letters for quotations, which she floats easily on her text together with the letters and diaries of others too, among whom James, his manner changing as time passes, is of course undisputed star. She moves familiarly through the entire period, comparing, say, Gosse's wife's attitude to his knighthood — she was a reluctant Ladyship — with Hardy's first wife's, who resented that, by choosing an OM, Hardy avoided sharing his house with her. Hence the book's close texture. It is a work of joyous and unremitting scholarship which Gosse himself might reasonably have envied, and it encourages the reader, in a positive sympathy of snobbishness, to feel that for a while he is living agreeably above his station, jostling the great.

Monty Haltrecht

Good and bad

The Dora Russell Reader. Edited by Dale Spender. Pandora Press £3.95. 0 86358 020 3. The **Religion of the Machine-Age.** By Dora Russell. Routledge £12.95. 0 7100 9547 3.

Dora Russell has grown venerable as she has grown old — for once following a conventional tradition — and at the age of 90 she has become a Grand Old Woman. Her public career began nearly 70 years ago, and she has been writing and publishing articles and books for more than 60 years, advocating a combination of feminism, socialism, antimilitarism, and humanism which once made her infamous and has now made her famous. Perhaps she will be best remembered for her practical work — especially her part in the campaign for contraception and her Beacon Hill School — but she is also well worth reading.

The two volumes of her autobiography, *The Tamarisk Tree*, made her known to a new generation, and now *The Dora Russell Reader* gathers a few of her many writings in a convenient paperback collection. The best things in it are the earliest — the whole of the tract *Hypatia, or Woman and Knowledge* (1925), and two extracts each from *The Right to Be Happy* (1927) and *In Defence of Children* (1932) — though some of her later journalism in anarchist and humanist periodicals is also impressive. The trouble is not so much that she has lost her touch as that society has at last caught up with her. In her new book she has tried to stay ahead of society, but has at last fallen behind it. *The Religion of the Machine-Age* took more than 60 years to complete, but it remains incomplete. It is a miniature history of human thought and activity from the point of view of feminism — or rather, anti-masculism — attacking reason and intellect, philosophy and science, technology and industry, war and the state.

all as manifestations of the male spirit which has perverted the true nature of humanity. It has been over-praised as much of her earlier work has been under-praised.

The trouble is that, in trying to redress the traditional bias against women, she leans too far the other way. She rightly emphasizes the female contributions to civilization, but wrongly omits the male contributions to her thesis — William Morris and Kropotkin, for example, or Gandhi and Danilo Dolci. She makes too many mistakes and misunderstandings. Above all, her main thesis is both false and absurd. Machines have been immensely important to humanity, but man does not worship them; and how seriously can one take an attack on the machine age which has been written on a typewriter (as may be seen from the photograph of the author on the jacket) and produced and distributed by a series of machines, or an attack on reason and intellect which is expressed in rational and intellectual terms? Finally, as her ally in so many of her struggles, I feel excluded by her dogmatic division of humanity into good women and bad men.

Nicolas Walter

Among this week's contributors:

Frank Field is MP for Birkenhead. Nicolas Walter is editor of the *New Humanist*. Monty Haltrecht is the author of *The Quiet Showman* (Collins), a biography of Sir David Webster. Brian Morton is features editor of *The Times Higher Education Supplement*. The review of Arrow's *Shakespeare Made Easy* (TES, May 11) was by Roger Knight, and not as stated.

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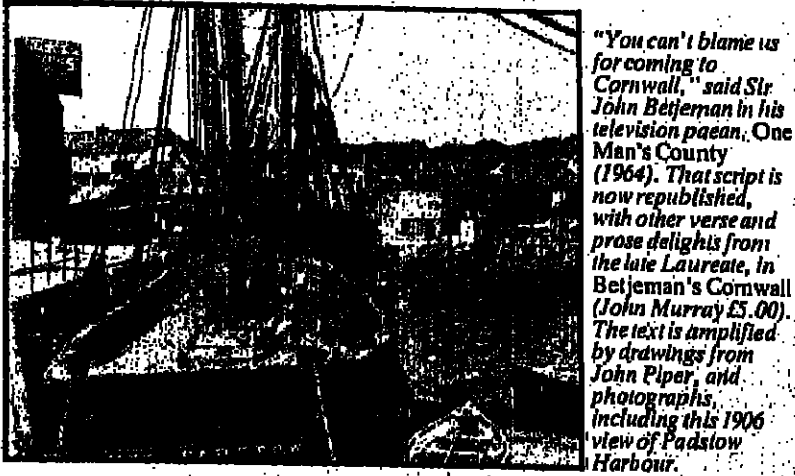
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BOOKS

Philosophy in the sixth form

The Heart of Philosophy. By Jacob Needleman. Routledge and Kegan Paul. £8.95.

It may be significant that as the Schools Examination Council has approved the Associated Examining Board's new syllabus for a philosophy A level, there are some important rumblings to be heard within the higher echelons of the philosophical world. In particular, the growing rapprochement between continental and Anglo-American strands of thought has raised fundamental questions about the state of philosophy as practised in universities today. This movement is exemplified in the work of Richard Rorty, who claims that certain perennial issues and sacred philosophical cows have outlived their usefulness. Furthermore, he argues that we must dispense with the whole notion of philosophy as a specialized professional domain or "Fach".

Needleman's book shares in these conclusions but with a telling difference. While the critiques offered by Rorty and others remain committed to a relatively technical and high altitude style, Needleman writes in an altogether more passionate and literary idiom. He argues that modern philosophy as a discipline has lost its way, and

claims that the essence of this way is to be rediscovered in the mystical roots of the Platonic and Pythagorean traditions. Philosophy must "remember" these origins in a movement of thought that cannot be restricted to the purely cognitive mode but which encompasses the complete being of the inquiring subject. In short, philosophy must be identical with self-inquiry; not in the sense of the ego-bound and introspective greater part of our psychic lives; but in a rare sense that is experienced both as a loss of self and as a passion for truth. This passion, "Eros", in Plato's sense, surfaces at crucial junctures in the lives of individuals. According to Needleman it is an energy source that must be tapped and cultivated.

Needleman's task is to prove the seemingly counter-intuitive claim that "Man cannot live without Philosophy". His account mingles autobiography and intellectual history in an honest and engaging fashion. This is most apparent in Part II of the book which describes his experience of teaching philosophy to a group of high school children. They symbolize for him a raw and formless innocence which is simultaneously a receptivity to "large" questions in life and an unexpressed vitality for inquiry. Such a

view clearly contradicts standard ideas that the more abstract intellectual and emotional faculties mature, if at all, later in life. In contrast, Needleman claims that modern adult living exhausts and suppresses authentic questioning, creating a inchoate frustration amid the swirl of Western material affluence.

Needleman's proposed reading list for his sixth form pupils is worth mention. The exclusion of such founding fathers of argumentative rigour as Descartes and Hume in favour of such works as Castaneda's *The Teaching of Don Juan* would be likely to raise eyebrows - particularly within the AEB whose course is traditional to say the least. However, Needleman reappraises rather than dismisses the mainstream historical representatives of philosophical thought and seeks to communicate an "authentic" core within their work. It is this that has been forgotten in favour of refining and sharpening the tools of logical analysis. Needleman endeavours to challenge the arid educational reality which the academic study of philosophy has become with a revitalized and fulfilling approach with which to regard and unravel the problems of the self and its environment.

To some extent Needleman antici-

pates his critics. The children who are the subjects of his teaching experiment are not, after all, typical - rather they are the privileged dependants of affluent parents. Furthermore, Needleman's existential-mystical perspective threatens at times to dissolve into the worst excesses of Californian "cultism". Clearly philosophy must remain the very antithesis of such forms of irrationalism. It is here that the value of rigour and clarity in reasoning - the Cartesian heritage - must be recognized. However, beneath these parochial dangers, *The Heart of Philosophy* brings to view an important issue. Sixth form studies in philosophy must be saved from becoming dilute versions of their university counterparts. While Needleman fails to entertain or describe the large questions of life that characterize "authentic" inquiry into any detail, the Platonic image of "Eros" at the heart of the process is nevertheless compelling. It would be a sad irony if those who sit the first examination for the philosophy A level in 1985 had cultivated a remote intellectual relationship with just another "subject". They would do well to read Needleman.

M K Power

Race and class

Race and Racism. By Ruth Benedict. Routledge and Kegan Paul. £3.95. 0 7100 9970 3.

Colonial Immigrants in a British City: A Class Analysis. By John Rex and Sally Tomlinson. Routledge and Kegan Paul. £4.95. 0 7102 0019 6.

Ruth Benedict's slim volume, written during the zenith of Nazi control over Europe and now republished in paperback, remains a classic exposition of the arguments to be marshalled against all forms of racism.

In lucid and succinct prose, Benedict argues that the concept of race is a purely taxonomic one based on the average distribution among different groups of a limited number of inherited characteristics. There is no substantive scientific evidence to suggest that psychological factors like intelligence are related to racial differences. Neither does the term "race" refer to existing nations or other groups, because these have been formed after continuous migration and intermarriage. It follows that no culture, nation-state or "blood" group may legitimately lay claim to the status of racial superiority over any other group.

It is important to understand how, in spite of the powerful logic which can be wielded against it, the fact of racial discrimination will often be left intact. This is one of the burdens of Rex and Tomlinson's extensively researched account of the life chances of West Indian and Asian residents in Handsworth, Birmingham.

The central thrust of this quasi-Marxist exercise in urban sociology is the claim that colonial immigrants in British cities have not become assimilated to mainstream white working class society, but that they form instead an underprivileged and increasingly alienated "under-class".

Supporting this claim with an informative and persuasive analysis of the employment, housing and educational situations of a large sample of the Handsworth population, the authors contend that unless something is done the creation of this "underclass" will eventually lead to wider forms of conflict within the community.

In view of the political fact of life that it is electorally unprofitable for the major parties to make special efforts in support of immigrants fighting racism, Rex and Tomlinson conclude that greater emphasis on multi-cultural education and a more sustained commitment to political organization both offer some hope of forestalling the coming crisis in race relations.

David Leppard



This punk girl, with her pastel-dyed pet rat, Sid (named after Sid Vicious), sleeps rough in the wealthy Leamington Spa. In Down and Out, Craythorn's Paris and London. Revisited, journalist Sandy Craig and photographer Chris Schwartz portray the plight of today's poverty-stricken and homeless. (Penguin in association with Shelter, £4.95.)

Neurons and emotions

The Mind. By Anthony Smith. Hodder and Stoughton. £10.95.

There are more questions than answers in Anthony Smith's *The Mind*. Why did the brain grow rapidly for three million years? Why are some people's brains bigger than other people's, who may be no less intelligent? Why does a pipriok to one part of the brain cause partial blindness? Why, as on at least one occasion, has a crowbar smashed through the head caused no more harm than a limp? Nobody knows.

Only recently has the brain had the sort of attention long enjoyed by the liver and kidneys and other organs. But it is at last the subject of large-scale, intensive research. Anthony Smith draws on all the recent discoveries to give detailed accounts of the parts of the brain, their evolution from much simpler, earlier organs, and their purpose and functions. He describes what is currently known of the workings of neurons to conduct the "physico-chemical" impulses which create feelings and thoughts. The details of axons and ions and dendrites are complex and startling.

The book is largely one of popular science. It is not one of philosophy. The word "mind" in the title might seem misleading, but is in fact justified. Anthony Smith does not limit himself to neurology and physiology; medical, educational and sociological matters are covered. He is dealing in his discussions of pain and the sense

ment of epilepsy and the education of gifted children, among other issues - with emotions and thinking, not just with neurons and ions. If nothing else justified the title, the exploration of the subject of "split brains" would. A brain cut in half through the corpus callosum gives rise to two "minds" in one head. (If a picture is shown to the left visual field, and therefore only to the right hemisphere, the speaking half of the brain - the left - will say it has seen nothing.) There remains only one brain.

In his discussion of these issues that are on the borderline between science and sociology or morality or politics, Anthony Smith shows not just clear understanding but good sense and compassion. He casts a luminous beam on the shadowy subject of brain death, urges more whole-hearted efforts at pain relief, and argues for special education for gifted children, to make the fullest possible use of their talents. "Thirdly, the inevitable pursuit of a morphine-like compound that is addictive seems to be receding from its goal. A receding pursuit? That is a not unfair example of the unfortunate linguistic obstacles sometimes placed in the reader's path. And for readers keen to explore the subject further, the lack of notes on sources and a bibliography is frustrating.

But in its wealth of information and the author's infectious enthusiasm and amazement at the "mind's" self-boggling wonders, this book is a joy.

Frances Hill

Good news

At Atlas of World Affairs. By Andrew Boyd. Methuen. £7.95 and £3.95.

This is a wonderful book for those of us who habitually turn to the foreign news to realize we've forgotten who the Polisians are, or the Kmer Rouge, or what Zaire used to be before it was a remarkable tour de force which is a tour du monde. Andrew Boyd gives us the political low-down on no less than 73 regions of the globe which is more or less all there are. This seventh edition scrambles almost up to date, to the end of 1982.

Of course the first law of contemporary history is that crisis is most likely to occur in the area and with the slant that your book has the sparest details on; certainly a bit more on the people's smiles right now. But other topical problems such as the intricacies of the Lebanese situation, the power struggle in the Gulf and the relationship of Hong Kong to China and the West, are all concisely and cogently explained.

A background reader to the news, this is an essential handbook for teachers of current affairs and international relations, who will appreciate not only the lucid text, but the excellent maps as well.

Jessica Saraga

O level logic

Understanding Arguments. By David Evans and Humphrey Palmer. Extra Mural Studies, University of Leeds. £4.95. 0 7158 0843 5. Book 946045 21 6. Includes post-playing cards.

Understanding Arguments is a book in logic devised for O level students and the like. They are reduced to a propositional calculus and predicate calculus with quantifiers. These calculi are related to logic in English. To ease students out of anxiety that the symbolism may induce, the authors have a method: a pack of cards, the symbols, with rules for the games of a familiar format. These, a good idea, since people already know how to manipulate symbols and to rows in card games and exactly what they have to do to calculate.

A difficulty that teachers of logic frequently encounter is the lack of any satisfactory comparison between logical operators and English words. The most common case is brought out vividly by paradoxes of material implication. Thus the symbolic "translation" of this review is written in *Not* then the moon is made of cheese would be a true statement. It is attention of a pupil is drawn to the of correspondence, he is told, dismiss the subject and be resistant to the amount of hard work that logic requires. The authors circumvent any such difficulty by a near total silence over such matters.

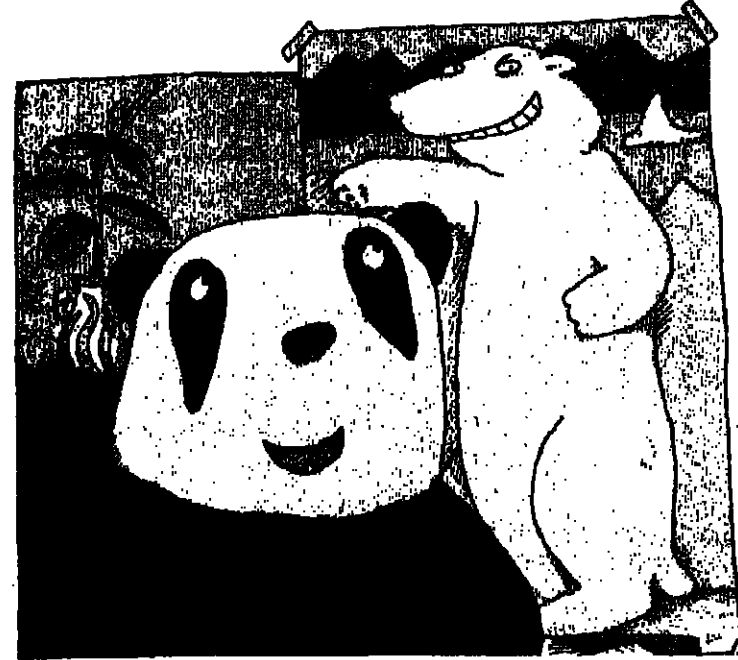
Besides this modern logic, the digest of fallacies, the book is a surprisingly elaborate presentation of syllogistic, and a chapter that seems to be mainly about definition but which is based heavily on the kind of statements one finds in books of "traditional logic". The theory of syllogism is swamped with diagrams. Venn's appear and one of the authors devises, and one of the authors relates to the other. Heavy made of the Medieval manuscript, using through the words from Boole to Frege, and the square of opposition and sub-contraries, contraries and still, even the authors themselves acknowledge that the modern predicate calculus is more powerful than syllogistic, and a knowledge of the intricacies and terminology of the syllogism will be of use only to the historian. Now it is an anxious quest.

It is in fact confusing. The juxtaposition of the two systems, syllogistic and the "traditional" version of statements assume that a statement to be analysed into a "subject" and a "predicate" and a "copula" in the form: "The subject is the predicate." This is not at all the analysis presupposed by the authors. Calculi in terms of the "subject" and "predicate" functions. One aspect of this difference is noted by the authors, the question of whether it implies that there actually are things. They say that the choice between "Yes" and "No" is a matter of convention. It is a symptom of a pervasive difference between the two systems.

The tone of the book is frequently disagreeable. There are too many examples that academic and silly examples that academic and silly examples are given to the sophists are given to the sophists. The authors are also far too prone to authoritarian and dogmatic statements on matters of high controversy. The authors are dismissed and the authors are dismissed and the authors are dismissed.

As the preface to this excellent series points out, it is on the frontiers of current knowledge that amateur students have much to offer. It is also fortunate that generally speaking, in those fields where the amateur student can be particularly useful (eg careful observation and recording over a period), neither expensive nor complicated equipment is required. One of the essential requirements forms an important feature of these books: keys for the identification of many of the groups which will be encountered, and

BOOKS



Guthrie the panda longs to be a tall, sleek, white polar bear and tries all kinds of ways to become one, including covering himself in milk and flour and balancing on stilts. Needless to say, he learns to love himself in Jonathan Allen's *Guthrie Comes Clean* (Dent £4.95, published May 31)

CHILDREN'S LITERATURE

Famously, intelligence tests given to black inner-city children in America have failed to measure true potential. Shown a picture of an aeroplane and asked what it was, the black child remained silent. Diagnosis: retarded. Asked by a black man, "Did you ever see your pappy beat up on your mama?" the child burst into a flood of vocalization. Diagnosis: deprived. Shown one of Dick Bruna's innocuous offerings, I surmise the response would be taciturn. The latest, *Farmer John, Miffy's Bicycle* and I know about shapes (all £1.50, Methuen) are as bland as ever, forthrightly-thomas-style excursions into simple concepts. Perhaps useful as simple readers for calm children.

Far more frightening but no more attuned to the reality of the child's world are two books translated from the Italian. *Five Little Mice* and *Who Says Miso?* (Methuen £3.95). Lurid colours and startling pop-ups illustrate two tales of search-and-find in what feels an unnecessarily extravagant way. No one could accuse Neil and Ting Morris of extravagance nor their current illustrator, Kati Teague, of being lurid. In a new series from Hodder and Stoughton, *Play and Learn Pop-ups* (£2.99 each) two children as inertly jolly as the families on cereal packets chase each other through *Shapes* and *Numbers* in a typical preschool day. Children will enjoy the play elements, but the "learn" component seems somewhat disconnected from the story.

A new series of that old favourite, *Spot the Dog*, shows how fun and learning can be integrated. At 75p each, the four *Read and Colour* (Heinemann) books scamper through *Spot Learns to Count*, *Spot's Alphabet*, *Spot's Busy Year* and *Spot Tells the Time* with ready-coloured pages facing ones drawn in outline and bumbly Spot frolicking among the appropriate symbols.

Victoria Neumark

Six legs good

Naturalists Handbooks 1: Insects on Nettles. By B N K Davis. 2: Grass hoppers. By Valerie K Brown. 3: Solitary Wasps. By Peter Yeo and Sarah Corbet. 4: Insects and Thistles. By Margaret Rodger. Cambridge University Press £8.00 and £2.95 each.

As the preface to this excellent series points out, it is on the frontiers of current knowledge that amateur students have much to offer. It is also fortunate that generally speaking, in those fields where the amateur student can be particularly useful (eg careful observation and recording over a period), neither expensive nor complicated equipment is required. One of the essential requirements forms an important feature of these books: keys for the identification of many of the groups which will be encountered, and

moreover, the keys provided are easy to use, and not, as does happen, written "by experts for other experts".

Each book indicates in the text where further knowledge would be especially useful, and *Grasshoppers* in particular suggests one or two areas of research-raising questions and making suggestions as to how solutions may be obtained - information very welcome to those defined in the preface as "sixth formers and those without a university training in biology".

The colour illustrations and line drawings are good, and in addition to notes on the treatment, storage and display of specimens, there is a wealth of valuable information about such things as drawing, dissecting, sampling and experiment techniques.

R C Vernon

Run, run as fast as you can

The Allen Wells Book of Sprinting. By Margot Wells. E P Publishing £2.95. 0 7158 0843 5. Focus on the Marathon. By John Humphreys and Ron Holman. E P Publishing £4.95. 0 7158 0848 6. **The Competitive Runner's Handbook.** By Bob Glover and Pete Schuder. Penguin £3.95. 0 14 046 563 0. **How We Learned to Ski.** By Ali Ross and Harold Evans. Collins £6.95 0 00 217164 3. **Trampoline, Beginner to Competitor.** By Bob Walker. E P Publishing £3.95. 0 7158 0850 8. **Understanding Billiards & Snooker.** By Jack Karmach. Pelham Books £5.95. 0 7207 14559. **Top Class Table Tennis.** By Jill Hammerley and Donald Parker. E P Publishing £4.95. 0 7158 0831 1.

To win the Olympic gold medal you have to be dedicated - nobody doubts that having seen Torvill and Dean in *The Allen Wells Book of Sprinting* catalogues the nature of that dedication. The text, written by Allen's wife Margot, describes some of the ecstasy of success and shows how this is only achieved through constant hard work. To be a good sprinter every muscle fibre has to be tuned to perfection, the whole body trained to unleash its power and to sustain maximum effort for the whole race. This is a very good practical guide to becoming a sprinter and there are plenty of photographs of Allen in action to inspire future Olympic gold medalists.

From Harold Abrahams to Allen Wells there have always been athletes consumed with the desire to run as fast as is humanly possible, but now there

are hordes of people who want to run long distances. *Focus on the Marathon* is a studious guide to marathon running, from the physiological demands of running a race, to the specialized diets to sustain the long distance athlete, all explained with meticulous attention to detail. Anyone from 18 to 80 can run a marathon provided they have prepared properly and this book has all the necessary information. The text is illustrated with photographs and diagrams to explain the training schedules and, although inclined to be rather technical in its physiological detail, it is painstakingly thorough and comprehensive. *The Competitive Runner's Handbook* is a reference manual specifically for athletes running distance races from the mile to the marathon. It is a book to dip into, whether you are an experienced competitor or just a novice, and there are plenty of charts to consult and handy hints about the tactics of running a long race. There is however a warning at the end of the book about becoming obsessed with running, that it can take over your life - looking at the suggested training programme, I am not at all surprised.

How We Learned to Ski is an instructional book with a difference. Instead of depicting the expert performing the technique, it traces the experience of three groups of people during a fortnight's ski instruction from Ali Ross. The book is a consequence of Channel 4's series on Ali Ross and his method of ski-teaching and how a group of beginners, a group of intermediate skiers and an advanced group of skiers fared, with varying ages and both men and women represented. Ali Ross' philosophy is that

learning involves the learner being totally aware of what he is actually doing, which is not necessarily what he thinks he is doing. He is also concerned that the pupil knows precisely what is happening to his body and skills while he is trying, for example, to execute a turn. Certainly the beginners made good progress; the intermediates and the advanced had more difficulty unlearning some of their bad habits.

Two conventional instructional books are *Trampoline - Beginner to Competitor* and *Understanding Billiards and Snooker*. The book on trampolining is compact with clear diagrams and straightforward text; an excellent guide for both participant and coach. With the tremendous television popularity of billiards and snooker, the second edition of Jack Karmach's well thought out manual will be well received. Clearly presented and with good illustrations, this book is definitely a must for all students of the game.

Jill Hammerley and her husband Donald Parker have tried to avoid falling into the trap of writing a book that covers everything from basic instruction to top competition standard. But have they? Entitled *Top Class Table Tennis*, it is not until chapter four that the meat of the book is revealed with emphasis on more advanced technique. The early chapters deal with the basic shots and information about equipment. Once into the more intricate skills the book is excellent with good advice for players on technique, tactics, and fitness.

Ann E S Howarth

Fit to play

Physical Fitness and Athletic Performance. By A W S Watson. Longman £8.95. 0 582 490944. **Judo Inside Out.** By Geoff Gleeson. Lepus Books £7.95. 0 86019 100 1. **Skillful Rugby.** By Ray Williams. Souvenir Press £4.95. 0 285 62614 0.

Physical Fitness and Athletic Performance is a textbook for students of physical education and allied subjects. It covers the factors affecting physical performance and how, through training, some of these factors can be influenced to improve athletic achievement. The information is presented for easy reference using clear headings and there is an excellent bibliography. The detailed explanation of the physiology, anatomy and biochemistry of athletic endeavour is followed by a section on training which uses recent research to assess critically the various methods.

Judo Inside Out by Geoff Gleeson and *Skillful Rugby* by Ray Williams are more than instructional manuals - they are an appraisal of sport itself. Kicking up the dust of present day assumptions that winning is all important, they are both concerned with the quality of skill rather than the quantity of success. Geoff Gleeson explains that judo is a paradoxical sport, turning the simple into a complicated art form and the difficult fighting skill into a simple technique. Exploring the differences between skill and technique, the author goes on to present a personal view of how to teach judo, adding many interesting asides on the nature of coaching.

Ray Williams' practical advice on coaching rugby has been gleaned from years of experience and should prove invaluable to coaches and players alike. The author's knowledge of the behind the scenes structure of rugby reveals the difficulty of a sport which has grown in a piecemeal fashion, desperately trying to shape itself into a centralized organization which can control the development of the game at all levels. This is a stimulating book written by a man dedicated to rugby and conscious of the importance of high standards of play for the future of the game.

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Index to Appointments vacant, Wanted and other classifications

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Deputy Headships Senior Masters/Mistresses 30
Other Appointments 30

Primary Education

Headships 30

Deputy Headships Senior Masters/Mistresses 32

Heads of Department 32

Scale 2 Posts 32

Remedial Posts 34

Scale 1 Posts 33

Middle School Education

Headships 34

Art and Design 34

Computer Studies 34

Craft Design & Technology 34

English 34

History 34

Mathematics 34

Modern Languages 34

Music 34

Pastoral 34

Physical Education 34

Science 35

Other than by Subjects 35

Secondary Education

Headships 35

Deputy Headships Senior Masters/Mistresses 35

Heads of Department 35

Nursery Education

Deputy Headships

Second Masters/Mistresses

Other Appointments

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

Sixth Form and Tertiary Colleges

Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

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Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

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Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

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Scale 2 Posts

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Musical

Pastoral

Physical Education

Science

Other than by Subjects

Sixth Form and Tertiary Colleges

Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

Sixth Form and Tertiary Colleges

Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

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Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

Sixth Form and Tertiary Colleges

Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

Sixth Form and Tertiary Colleges

Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

Sixth Form and Tertiary Colleges

Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

Art and Design

Classics

Commercial Subjects

Computer Studies

Craft Design & Technology

Economics

English

Geography

Home Economics

Humanities

Mathematics

Modern Languages

Musical

Pastoral

Physical Education

Science

Other than by Subjects

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Headships

Deputy Headships Senior Masters/Mistresses

Heads of Department

Scale 1 Posts

Scale 2 Posts

Remedial Posts

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COMPUTERS IN EDUCATION

THIS WEEK

Computers and creativity	40	Microelectronics for All	46
The IoIT	41	Californian training course	47
Evaluating software	42	Micros in English	80
Micro-PROLOG	43	Data-handling in the primary school	81
Hardware review	44	Wordprocessing	82
New versions of LOGO	48	Croydon Certificate of Computer Competence	83
		Milton Keynes Diploma	84
		Telesoftware	86
		Slide/tape review	86
		Quinkey	86
		Software reviews	86
		Economics	86
		Primary maths	86
		Domestic science	86
		Chemistry	87
		Applications software	88



Team efforts

Tim O'Shea on how the quality of educational software could be improved

In the early sixties the proponents of the use of computers in schools were divided into two opposed factions. One faction, whose main spokesman has been Professor Pat Suppes of Stanford, argued that pupils can be taught by patient computer tutors which provide immediate feedback and respond directly to the rate of learning of the individual pupil.

The other faction, led by Professor Seymour Papert of the Massachusetts Institute of Technology, has advocated that pupils should "teach" the computer by using special purpose programming languages that make it possible for them to express their own reasoning processes. Both the "computer as tutor" and "computer as tool" factions can point to particular drill and practice packages or programming languages which successfully use their approach.

One issue on which both factions currently agree is the very low quality of most educational software. The deficiencies are both technical and educational. Technical failings often include: a lack of portability which makes it impossible to transfer the programs to other computers without major rewrites; poor design, which makes it very difficult to monitor the performance or improve it by modifying a program and a lack of user-friendliness which makes it easy for the pupil user to inadvertently cause the program or system to do something inexplicable and unusable.

Educational deficiencies can be found at the level of individual pupils using relating to the curriculum or for classroom setting. For example, a teaching program may not be able to respond to different types of conceptual error in the pupils' work, a package may use a different mathematical notation from that used in the school textbook, or a programming language may only be usable if there is one computer per two children in the

classroom, into a trap which includes underpowered microcomputers with small memories equipped with programming languages such as BASIC which are quite unsuitable for serious software development. The educational programmer's life is made even harder because of the variety of Basic variants from microcomputer to microcomputer as do the graphics facilities, filing systems and the operating systems which the programs will use or be controlled by.

The long term solution to the problem of poor quality educational software is quite clear. The experience of the commercial world of computer science in software development and the academic world of psychology on learning processes and cognitive skills must be drawn on. Educational software production requires a team effort which includes a programmer, a cognitive psychologist, an educational technologist and experienced teachers.

There should also be a clear distinction between software development and delivery. Programs should be developed as prototypes using powerful software and hardware facilities. In particular a high level language that permits the use of structured programming techniques should be employed. The prototypes should then be tested with pupils and teachers in real classrooms.

When developmental testing is completed, particular versions of the package can be delivered on specific microcomputers. During the design phase the psychological literature should be drawn on or experiments carried out to analyse possible learner variation and the class of software environment under which the package should run should be planned for. For example, established operating systems have a much longer life than particular microcomputers. A package should be designed to run in a software environment based on an operating system

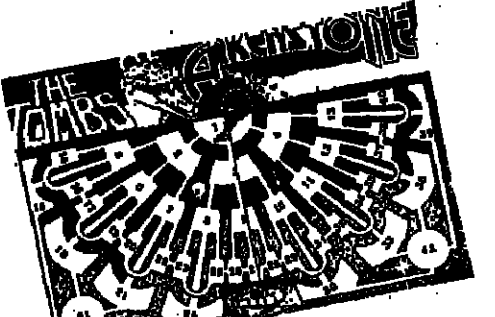
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LONDON ALLOWANCE: £981
CLOSING DATE As soon as possible
Required for beginning of June to end of December, a teacher of Business Studies. Subjects include Commerce, Office Practice, Typewriting, and shorthand (as applicable). This is a replacement for the Head of Department and a scale post is available for a suitably experienced candidate.
Application forms and further particulars of the post are available from the Head Teacher at the above address. Please enclose stamped envelope (03059) 131822

NEWHAM
LONDON BOROUGH OF NEWHAM
WOODSIDE SCHOOL
Woodside Road, London E13
Head Teacher: M.J. Walton
Number of posts: 1
TEACHER OF OFFICE PRACTICE & TYPING
Scale 1
Required: SEPTEMBER 1984.
An enthusiastic teacher of Office Practice & Typing is needed for this form and 12/12 school. There is an opportunity for curriculum development in this subject area, as part of the school's curriculum review. Work at present covers 4th/5th year option groups, (CSE/RS/Practical) and 6th form. City Guide students, 1987 plus Social Priority Allowance.
Application forms (s.a.e. please) from the Head Teacher to whom completed forms should be returned by 15 June 1984.
DIRECTOR OF EDUCATION, Education Office, 57/58, High Street, Stratford, E15 4RD.
An equal opportunity employer. (03060) 131882

NORTHAMPTONSHIRE
WOLLASTON SCHOOL
Trichard Road, Wollaston, Northants, NN15 7JH
Required: September 1984, for one year due to redundancy. TEACHER OF BUSINESS STUDIES at the rural 11-18 Comprehensive School.
Teaching is in years 3 to 6 and includes typewriting, office practice, commerce and business technology. There are full range of established examination courses. Possibility of scale 2 post. For suitably qualified and experienced applicant but applications from new entrants to the profession will be welcome.
Excellent facilities and equipment including word processing.
Further details and application forms from the Headmaster (S.A.E. please) to be returned as soon as possible. (03057) 131822

TECHNICAL AND VOCATIONAL INITIATIVE (T.V.E.I.)

Applications are invited for the posts of

1. Careers Tutor
2. Technology Tutor
3. Business Studies Tutor

From January 1985 or earlier if possible to support the operation of the above project.

Salary Band 1 scale 4.

Removal and disturbance allowance scheme in operation.

Please send large s.a.e. for application form and details to County Education Office, PO Box 47, Threadneedle House, Market Road, Chelmsford, Essex CM1 1LD.

Closing date: 15th June, 1984. (4436)



SURREY
EDUCATION COMMITTEE
ASHFORD SCHOOL
Ashford, Surrey
(13 1/2 Mixed Comp. ENOR. 1150) Scale 1 post-time (approx. 55/100) Teacher of TYPING required September 1984. (Experienced non-qualified instructors would also be considered).
Application form and further details from Head Teacher Ashford 43824. (00875) 131822

Computer Studies - Heads of Department

BROMLEY
LONDON BOROUGH OF BROMLEY
DARRICK WOOD SCHOOL
Londons Avenue, Orpington, Kent BR6 5ER
Required for September 1984, a Head of Department, Scale 1, to be responsible for developing Computer Assisted Learning (CAL) in the school and to teach Computer Studies to 10/11 level. Applicants should have good powers of organization and ability to motivate pupils. Initial salary will be necessary for the successful candidate to teach some Mathematics initially. Application forms and further particulars available from the Headmaster at the above address. Completed forms should be returned to the school by 17th June 1984. (03781) 132018

EAST SUSSEX
BOARZELL TUTORIAL COLLEGE
DIVISION OF COMPUTER STUDIES - SEPTEMBER 1984.
An experienced and enthusiastic teacher is required to take charge of an expanding Scale 1. Successful applicant would also advise staff on the use of computers across the curriculum and throughout the administration system. Offered in the field of Physical/Thematics would be beneficial. Single accommodation may be available.
Applications, with curriculum vitae and the names and addresses of 2 referees to the Principal, Boarzell Tutorial College, Rural Green, East Sussex TN19 7QV. (03174) 132018

Scale 2 Posts and above

WEST SUSSEX
CHICHESTER HIGH SCHOOL
FOR GIRLS
Stockbridge Road, Chichester PO19 3EE
(Group 18, 11-18 Comprehensive)
Required: September 1984. Teacher of Science/Mathematics (Scale 2) to be responsible for the co-ordination of Computer Education and to develop science based Technology. Forms and details from Headmaster please. (03957) 132020

Scale 1 Posts

BROMLEY
LONDON BOROUGH OF BROMLEY
KELBY PARK SCHOOL FOR BOYS
Beckenham, Kent BR3 3EJ
Required: September 1984. Teacher of Science/Mathematics (Scale 1) to be responsible for the co-ordination of Computing (Scale 1).
Application forms and details from Headmaster please. (03781) 132022

DEVON
Please see displayed advertisement on Page 37. (04058) 132022

BERKSHIRE
FURZE PLATT COMPREHENSIVE SCHOOL
Marlow Road, Maidenhead, Berkshire SL6 5JH
Required: September 1984. ASSISTANT TEACHER FOR COMPUTER STUDIES.
There is a Scale 2 post for a suitable experienced teacher, alternatively this is initially a Scale 1 for a first appointment or similar teacher with the possibility of future promotion. Computer Studies and Computer appreciation courses are well established in this 11-18 Co-educational Comprehensive on the edge of Maidenhead. It is hoped that C.A.L. will be developed on a steady basis during the next few years.
Please apply to the Headmaster immediately by letter stating age, qualifications and experience. No closing date. The relevant information and naming two referees. No closing date. An Equal Opportunity Employer. (03080) 132022

HAMPSHIRE
QUEEN MARY'S COLLEGE
1200 Mixed
Required: September 1984 in this expanding comprehensive school for 11-18 year olds to teach Computer Studies. Mathematics. All staff are appointed as personal tutors as well as subject teachers.
For details of the Principal, Queen Mary's College, Cliddesden Road, Basingstoke Hampshire RG24 3HF. (04040) 132022

KENT
COUNTY COUNCIL
NORTHFLEET GRAMMAR SCHOOL
Northfleet Building, Colver Road, Northfleet, Gravesham, Kent DA11 8BQ
A mixed upper school providing GCSE 'O' and 'A' level examinations for pupils of academic ability entering at 13 plus and 16 plus from High School. Roll 450, sixth form 200.
Required: In September 1984 a Computer Specialist willing to be involved in the development of the subject within the context of the Education Department. Well-established courses already exist for a level Computer Science in the sixth form and for O level computer studies in the fourth, fifth and sixth forms. There is scope for development of more vocational courses. Candidates should be able to offer another subject to O or A level. There is also plenty of scope for involvement in sports and extra-curricular activities.
Apply immediately by letter to the Headmaster giving full details of education, qualifications and experience and quoting the names and addresses of two referees. Closing date 6th June 1984.

SWALE DIVISION
THE SHEPPEY SCHOOL
Headmaster: R.O. Barson, R.O.
Fully comprehensive mixed upper school 13-18 years. 1800 plus on roll.
Scale 1. Required for September 1984, an enthusiastic and successful teacher of COMPUTER STUDIES.
O level and eventually 'A' level teaching. A range of second subjects would be acceptable.
Letters of application, together with curriculum vitae and names and addresses of two referees to the Headmaster, The Sheppey School, Minister Road, ME15 5JQ. (13064) 132022

MERTON
LONDON BOROUGH OF MERTON
EDUCATION COMMITTEE
ROWAN HIGH SCHOOL FOR GIRLS
Rowan Rd., London SW16 5JF
Headteacher: Mrs D.G. Haugh
Tel: 01-764 7178
Age Range: 13-18 yrs.
No. on Roll 550
LONDON ALLOWANCE £981
CLOSING DATE As soon as possible.
Required for September 1984, a teacher of Computer Studies, to lead and develop the subject throughout the school. There are very good facilities. The successful applicant will also be required to teach some science. This could be a Scale 2 post for an experienced teacher, but newly qualified applicants would be welcome.
Local languages and assistance towards removal expenses would be considered in appropriate cases.
Application forms and further particulars are available from the Head Teacher at the above address. Please enclose stamped envelope. (03048) 132022

Craft, Design & Technology

HEREFORD & WORCESTER COUNTY COUNCIL
WOLVERLEY HIGH SCHOOL
Wolverley, Kidderminster, Worcestershire DY11 5XQ
Group 11
Number on Roll 850
Required for September 1984, a major Head of Department for Design and Technology Scale 2. Candidates must have a minimum of 5 years' experience and enthusiasm to re-align a traditional department to accommodate the growth of close ties with Design and the Sciences. Knowledge of building and construction of City and Guilds Foundation is an advantage, as is understanding of new methods of teaching required in the development of 6th Form studies in ART/CRAFT courses.
Further details and application forms can be obtained from the Headteacher on receipt of a local authority reference dated 14 days from the appearance of this advertisement. (03090) 132115

Scale 2 Posts and above

DEVON
Please see displayed advertisement on Page 37. (04058) 132120

BERKSHIRE
ROYAL COUNTY OF BERKSHIRE
EASTMISTREAD PARK SCHOOL
Wokingham, Berkshire
Comprehensive N.O.R. 1598
Required for September, two teachers of CRAFT, DESIGN AND TECHNOLOGY. (one of which will be taught jointly with the Science Department, being introduced in September. Applications from teachers who have an interest in electronics or work with micro-providers will be welcomed. The School will be taking part in the T.V.E.I. Scheme as from September. Please apply for an application form and further details from the Principal, Eastmystread Park School, Wokingham, Berks. RG11 3JF. (0345) 132120

Scale 2 Posts and above

DEVON
Please see displayed advertisement on Page 37. (04058) 132120

ESSEX
ST. CLERE COMPREHENSIVE SCHOOL
Suite Lane, Stanford-le-Hope (Roll 800) 11-16
Tel: 0206 438475
Required for September 1984, a Teacher of CRAFT, DESIGN AND TECHNOLOGY. Scale 2 (London Fringe Allowance).
Full details and application form, on receipt of s.a.e. from the Headmaster, Stanford-le-Hope School, Suite Lane, Stanford-le-Hope, Essex SS15 2JF. (0206) 438475

KENT
COUNTY COUNCIL
EDUCATION DEPARTMENT
MAIDSTONE DIVISION
MAIDSTONE GRAMMAR SCHOOL
Barton Road, Maidstone ME13 7BT
Headmaster: P.A.J. Pettit
M.A., D.Phil.
In September there will be a vacancy for an inter-terminating young teacher of CDT and Design to work up to GCE 'A' level. The successful candidate will be a member of the staff of the block within this selective school. 50% of boys (1980 in the sixth form) are Specialist in WOODWORK. Within Design would be well-come, but there will be opportunities for anyone interested in Technology or Engineering. The post offers exciting prospects in a congenial situation.
A Scale 2 post will be available for a suitably qualified and experienced candidate. Apply with curriculum vitae and names of two referees directly to the Headmaster. (13075) 132120

BUCKINGHAMSHIRE
MILTON KEYNES AREA
STANTON COLLEGE
BRINDLEY HALL SCHOOL
Stantonbury, Milton Keynes
Stantonbury Campus is a multi-functional Education and Community Centre within the developing City of Milton Keynes. The campus is a comprehensive community school for 11-18 year olds and includes a two year structural link with the Campus philosophy. Post 16 provision is made through the Campus Sixth Form of 400 students including over 180 adults.
Required for September 1984 to join the faculty of Education, Post 16 provision is made through the Campus Sixth Form of 400 students including over 180 adults.
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Scale 1 Posts

BERKSHIRE
EASTMISTREAD PARK SCHOOL
Wokingham, Berks. RG11 3JF
R.O. 1600, 140 6th Form
Required for September 1984, a teacher of CRAFT, DESIGN AND TECHNOLOGY. (one of these posts could be a Scale 2 post for a suitably qualified and experienced candidate). There is a Scale 1 post for a teacher of Design and Technology. The successful candidate will be responsible for the design and construction of a new 'level' course in Technology, which will be taught jointly with the Science Department. Being introduced in September. Teachers who have an interest in design and technology or work with micro-providers will be very welcome. The school will be taking part in the T.V.E.I. Scheme as from September. CLOSING DATE 15th June 1984.
Applications to The Principal, Eastmystread Park School, Wokingham, Berks. RG11 3JF. (0345) 132120

BERKSHIRE
THEALE GREEN SCHOOL
Theale, Reading RG7 5DA
Required for September 1984, a teacher of CRAFT, DESIGN AND TECHNOLOGY. (one of these posts could be a Scale 2 post for a suitably qualified and experienced candidate). There is a Scale 1 post for a teacher of Design and Technology. The successful candidate will be responsible for the design and construction of a new 'level' course in Technology, which will be taught jointly with the Science Department. Being introduced in September. Teachers who have an interest in design and technology or work with micro-providers will be very welcome. The school will be taking part in the T.V.E.I. Scheme as from September. CLOSING DATE 15th June 1984.
Applications to The Principal, Theale Green School, Theale, Reading RG7 5DA. (0345) 132120

CUMBRIA
STAINBURN SCHOOL
Workington
Comprehensive, Group 11, 6th Form
Required for September 1984, an Assistant Teacher of CRAFT, DESIGN AND TECHNOLOGY. (one of these posts could be a Scale 2 post for a suitably qualified and experienced candidate). There is a Scale 1 post for a teacher of Design and Technology. The successful candidate will be responsible for the design and construction of a new 'level' course in Technology, which will be taught jointly with the Science Department. Being introduced in September. Teachers who have an interest in design and technology or work with micro-providers will be very welcome. The school will be taking part in the T.V.E.I. Scheme as from September. CLOSING DATE 15th June 1984.
Applications to The Principal, Stainburn School, Workington, Cumbria. (03098) 132120

DEVON
Please see displayed advertisement on Page 37. (04058) 132120

BERKSHIRE
ROYAL COUNTY OF BERKSHIRE
EASTMISTREAD PARK SCHOOL
Wokingham, Berkshire
Comprehensive N.O.R. 1598
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BRADFORD
CITY OF BRADFORD
EDUCATION DEPARTMENT
RHODEWAY SCHOOL
Rhodeway in September at this 13-18 co-educational, comprehensive school of 1370 pupils. The school has a Scale 1 teacher of Graphical Communication/Technical Graphics. Applicants should be capable of teaching at least 2 'O' level subjects and be enthusiastic about participating in courses. An interest in Technology would be an advantage.
Full details and application form, on receipt of s.a.e. from the Headmaster, Rhodeway School, Oaks Lane, Allerton, Bradford BD11 7RT to whom completed forms should be returned by 18 June 1984.
Bradford is an equal opportunity employer and welcomes applications from candidates of any race, sex, age or disability. Please state otherwise stated. (02995) 132122

BRENT
LONDON BOROUGH OF BRENT
ST. GREGORY'S HIGH SCHOOL (MIXED) SCHOOL
Donation Road, Kanton, Harrow HA5 0NB
(Roll 1300) 11-18
Required in September - A Teacher of CRAFT DESIGN AND TECHNOLOGY. Scale 1 post. London Allowance of £987 per annum. Ability to teach a full range of subjects. Brent is fundamentally committed to Multi-Cultural Education. Application forms (s.a.e.) obtainable from the Headteacher, returnable within 10 days. (04051) 132122

BUCKINGHAMSHIRE
MILTON KEYNES AREA
STANTON COLLEGE
BRINDLEY HALL SCHOOL
Stantonbury, Milton Keynes
Stantonbury Campus is a multi-functional Education and Community Centre within the developing City of Milton Keynes. The campus is a comprehensive community school for 11-18 year olds and includes a two year structural link with the Campus philosophy. Post 16 provision is made through the Campus Sixth Form of 400 students including over 180 adults.
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CAMBRIDGESHIRE
HUNTINGDON AREA
HITCHINGHAM SCHOOL
Hitchingham, Cambs
Required for September 1984, a teacher of CRAFT, DESIGN AND TECHNOLOGY. (one of these posts could be a Scale 2 post for a suitably qualified and experienced candidate). There is a Scale 1 post for a teacher of Design and Technology. The successful candidate will be responsible for the design and construction of a new 'level' course in Technology, which will be taught jointly with the Science Department. Being introduced in September. Teachers who have an interest in design and technology or work with micro-providers will be very welcome. The school will be taking part in the T.V.E.I. Scheme as from September. CLOSING DATE 15th June 1984.
Applications to The Principal, Hitchingham School, Hitchingham, Cambs. (0455) 132120

DEVON
Please see displayed advertisement on Page 37. (04058) 132120

ENFIELD
LONDON BOROUGH OF ENFIELD
SOUTHGATE SCHOOL
Southgate, London N14 6LJ
Required for September 1984, a well-qualified teacher of CRAFT, DESIGN AND TECHNOLOGY. Scale 1 post. London Allowance of £987 per annum. Ability to teach a full range of subjects. Brent is fundamentally committed to Multi-Cultural Education. Application forms (s.a.e.) obtainable from the Headteacher, returnable within 10 days. (04051) 132122

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EXTRA

Team effort

continued from previous page

rather than on a particular micro-computer.

There are various good omens for the future. One software tool that promises some help but is not yet mature is the authoring system. An authoring system is intended to make it easy for the educationist with limited programming ability to generate teaching software. Currently these are best suited to producing automated programmed learning tests with frames of information and multiple choice questions. However, there are some new developments incorporating more sophisticated programming techniques which include the work of Dr Richard Brandt at Utah and Ken Tait at Leeds.

Artificial Intelligence research is an obvious source of help for the educationist programmer because that is where modern computer science meets cognitive psychology. Programming languages which are being experimented with in education are LOGO, PROLOG and SMALLTALK. There are also a variety of intelligent computer tutors which include natural language interfaces and models of the individual student's state of knowledge. One recent pleasing piece of work by Mike Fox while he was at Essex University builds on computer models of arithmetic skills to provide rudimentary expert systems which can diagnose errors in subtraction.

Another important source of information comes from field studies carried out by cognitive anthropologists in their attempts to understand human computer interactions. For example, Dr Tom Malone for his Stanford PhD analysed the various components of successful computer games and Dr Jim Levin at San Diego has been observing the educational use of computers in non-school settings.

Range of skills

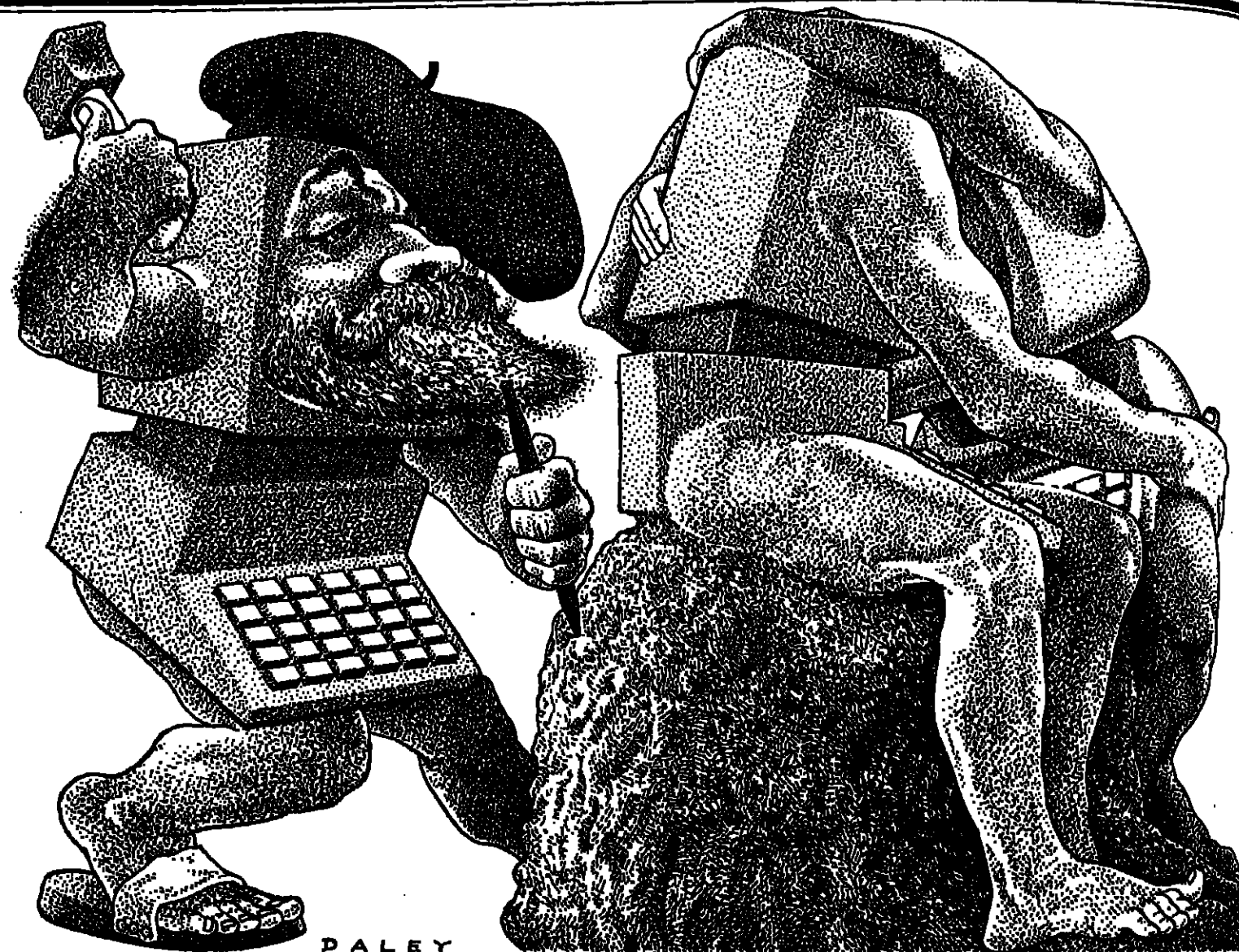
It is possible to produce good quality teaching programs and languages for learners. Success depends on understanding what has been achieved in the past in a variety of errors and in ensuring that an appropriate range of skills are applied to the various educational and computing design problems that are met en route to making valuable contributions.

At the Open University, we have produced, with funding from the Microelectronics in Education Programme, an educational software pack (for Apple, RML 380Z, RML 480Z, BBC Model B and Sinclair Spectrum), which is designed to help teachers become intelligent consumers of the various computer hardware and software products touted for classroom use. The pack includes Logo and Basic programs designed to reveal the inner workings of educational computer programs. It also includes commercial-produced software for the student to evaluate and videocassette material which follows the software design, development and delivery processes.

The printed material guides the student through various programming and evaluation exercises and includes a reader with articles from computer scientists, cognitive anthropologists, educationists and the artificial intelligence. The pack does not turn teachers into programmers but rather equips them to understand the limits to, and possibilities for, educational software.

In the long term we must hope that individual teachers will no longer have to design educational software projects, that they would not be sole architects for the new school building or independent designer of a new school bus. Instead teachers must educate themselves so that, as computer hardware becomes cheaper, they can realistically demand high educational quality in classroom computer products and to enable them to function effectively as members of teams producing educational software.

Dr Tim O'Shea is director of the Micros in Schools Project at The Open University. He is co-author with Dr John Self of Learning and Teaching with Computers, published by Heinemann.



DALEY

Conscious change

Daniel Chandler on technology and creativity

LIKE many people, I have a deep distrust of technology. For me it is partly the result of being conditioned by institutional education to wear badges such as "Creative" and "Romantic" like a uniform. At grammar school I vividly remember being told that I wouldn't be allowed to use any of the intriguing machines in a building labelled "technical" something or other: I was "Arts".

As an English teacher, when I first encountered computers about four years ago, I remember being asked by more than one of my departmental colleagues what it was about computers that interested me, since they had always thought of me as being "creative".

My response now would be that I took the advent of the personal computer to make me aware that technology and creativity need not necessarily be mutually exclusive. Writing this article with a wordprocessor, I would add that, if anything, my own use of the medium has in some ways enhanced my feeling of creativity. In the sense that it positively encourages me to revise and reshape my thoughts on the screen, simply because it's so easy.

Many technophobes might draw comfort from the fact that Plato, in the *Seventh Letter* and the *Phaedrus*, condemned technology with vigour: it would weaken the mind and destroy memory. But all teachers are now engaged in promoting the technology be feared - namely, writing.

As, for instance, Walter Ong has demonstrated in his book *Orality and Literacy* (Methuen, 1982), the technology of print has transformed its short history not only our culture but also the very nature of our consciousness. Indeed, it is the fact that the technology of literacy has become so deeply interiorized that makes it so difficult for us to regard it as a technology like the computer. Plato would surely have agreed with Oscar Wilde's remark that literacy destroyed communication: precisely the same fears that many of us have about the computer.

We cannot pretend that we don't have computers any more than we can pretend that we don't have writing, and it is not unreasonable to consider the possibility that the spread of computers could have as profound an effect as print in an even shorter time. Certainly any consideration of the impact of computers on literacy has to range far wider than a survey of what computers could be (or, more depressingly, are being) used to do in primary schools and secondary English departments. It has to take account of the fact that the computer will be a

major factor in the transformation of the character and function of the written word within our lifetimes. Books will not disappear, but they will become as special as they were in early manuscript culture, and the printed word will become as representative of the full range and potential of words as photographs are of the power of visual imagery.

Books freeze words into an immutable pattern: that is both their weakness and their strength. Print on paper allows us to share, study and build on ideas in ways which are not open to preliterature cultures. But with the printing press came the book as authority, the author as special person, the notion of plagiarism and copyright, the concept of reading as a private and silent act, and the convention of writing. True, middle-class literates were accorded a new sense of independence, but at what cost? And is this the inevitable penalty of literacy?

We are moving towards a networked society, in which the facilities we have for global contact via electronic means are being unified into systems allowing us to obtain an instant display of everything from what's on at the local theatre, to any text we may wish to select from the electronic libraries of the world. If such developments were to be regarded simply as the creation of an "Encyclopaedia Galactica" then we would be justified in considering this to be simply the addition of new covers to old books. And we might prefer the old covers.

But there are added dimensions in the computer-based medium which we must consider; if only to reject them for some of our purposes. I don't propose to list the oft-quoted advantages of computer-based information retrieval; indeed I could cite some situations in which a book would be a far more suitable medium for such a purpose. The point I would like to make here is that such a medium offers at least the potential for the erosion of what have become the conventional roles of writer, publisher and reader.

We could have a situation where anyone could add whatever they wished to what would be both a local and global network. They might use it for many things: such as asking for advice on learning carpentry (or Sanskrit), or the publishing of their own poetry and short stories, or the

personal adaptation of other people's offerings.

Amidst the plethora of gems and garbage which such opportunities would spawn (demanding, incidentally, a new kind of discrimination in the reader), we could witness the death of the author as special person - or, to put it more positively, the emergence of the concept of writing as a collaborative act, of writers as their own publishers, and of reading as participatory rather than passive.

Books would retain their place as immutable objects inviting the magnifying glass of thought. However, the new medium would form not only the routine resource for up-to-date information, but would have characteristics which would mean, in the words of Christopher Evans, that "books will come down from their shelves, untuck and release their contents, and enquire, even beseech, their owners to make use of them".

I am conscious of having divorced these speculations about the computer as a medium from a social and political context. Technology is not neutral. We cannot separate tools from the interests which bring them into being and the uses to which they are put.

One might argue that the dominant industrial ethos is a major reason for the fact that the vast bulk of supposedly educational applications of computers are concerned with processing information from "input" to "output" in terms of behavioural objectives and "quality control". The microcomputer will be easily tamed and trivialized if institutional education simply absorbs it as an "educational technology".

Ask computer-owning teachers what they use their computers for and they'll tend to list wordprocessing, data-handling and programming; ask the same teachers what they use them for with children and they'll list "educational" programs. As network systems of linked microcomputers spread in schools, it looks likely that they will be used to provide individualized instruction in increasingly narrow skills rather than being used as liberating tools such as wordprocessors. I would suggest that they could just as easily be regarded as ripe for hijacking as subversive devices. Creative teachers aware of the prevailing bias of technology could choose to use them to

that's what we want to do.

We could choose to use the new technology for collaborative writing, for electronic publishing. We could explore non-linear patterns of fiction such as adventure-games, in which the reader can become a character in the plot - we could indeed allow children to create such story-games themselves. We could explore the unique literary possibilities of a medium which allows us to play with movement and colour in text, so that we can have animated shape poetry which is kinetic and interactive in ways demonstrated, for instance, in the electronic poem by Roger McGough which accompanies the IBC Microcomputer.

Such a use of the computer would involve a conscious act of positive discrimination: a determination to refuse to use it to process children in favour of sharing it with children as a useful tool, just like the pen, the typewriter or the book. Whether we in fact take this direction depends on us: technology won't take us where we will deserve what we get, so those of us who have felt excluded from the field of technology must begin to take an active part in creating the tools we would like to use.

This must involve escaping from the powerful conventions we have absorbed from print if we are to avoid using computers as electronic word boxes. The only way to do this is to play with the medium ourselves, so that we can at least learn enough about it to explain to professional programmers what kind of tools we might like to use. Initially, at least, a playful, open-minded exploration of the medium must also involve the temporary suspension of such roles as "English teacher".

Simply looking for ways in which the computer could do what one is doing already may lead to impoverished visions of the possibilities. Computers weren't designed for schools, and for English teachers, but that certainly does not mean that they do not offer powerful possibilities for reading, writing and talk. And one might argue that those whose creativity may be in doubt are teachers who are not prepared to take the imaginative leap.

On page 50 Richard Knott and Jim Ashton describe how they introduced the computer into English.

This article is based on talks given by the author at National Association for the Teaching of English meetings held recently in Birmingham and Durham. His latest book *Young Learners and the Microcomputer* is published by the Open University Press.

We are all hooked on micro-computers, that's for sure. You wouldn't be reading this if you weren't. But we are still waiting to find out what they really do to help the clients - the learners - for whom we are told, these devices hold so much promise. It's a trifle surprising to realize that a whole new educational system is being developed which is almost entirely based upon rhetoric. There's no proof, yet, that computers make for better learners. Nor, for that matter, is there proof that better learners ultimately make better computers. Still, we are all hooked, so there must be something in it. The trouble is that computers have arrived too fast, and while we are struggling to assimilate their potential and accommodate their whimsical ways we haven't had much time to actually think about what the "something" might be.

Even the experts are a bit baffled. They sold computers to us so that we could play games. Many of us had to buy another set to accommodate the "VDU freaks" that the games helped to develop. But it's OK now - for we are also now hooked on Educational Software: so watching the tv screen for hours is OK. So too is pressing a few keys now and then, reading the usually appalling prose in the manuals, filling in spaces instead of writing proper sentences, talking the new acronymic language - all of this is OK because it's Education. Everything we know can now be boiled down to the seven character words these machines seem to need. Life, as they say, is just a bowl of binary bits.

However, one of the old 11 character words which needs more attention is Information. We are using it, but there's a hollow ring - ask anyone what Information is and you will hear the hollows. Try to "write down all you know" about Information and see how the string of your thinking ties itself into knots. Clive Sinclair tells us that "electronics is replacing man's mind, just as steam replaced man's muscle."

But computers can only add and compare - until we can show them a Mind, how can they replace or even copy it? We don't entirely know what a Mind can do, but we do know that it is the most complex, sophisticated information processor around. So if we want to use machines to free our minds from drudgery then we need to know about Minds - and about Information. For in many ways, Mind is Information.

All our senses converge upon Information and our Mind processes this into feelings, knowledge and action. When we study, we are acquiring information, processing it, storing it, organizing it, and retrieving it in order to apply or use it. Information is an important commodity - and arguably the fastest-developing commodity that this country has to offer - the Cabinet Office Information Technology Advisory Panel urges that "more attention be paid to the I of IT" and it makes sense, for what use is the information stored, processed and delivered to us if we have neither need nor purpose for it?

But then, school has tended to ignore Information. Children learn Subjects. Children do Projects. Teachers deliberate upon Curricula. Academics pursue Disciplines. And yet all of these have a common element: inside each is Information, and what we do is to get it, organize it, store it, retrieve it, process it, relate it, remember it, and apply it. However, if we all did these things, exams and schools might prove irrelevant - for we would all be "good" students. For the really significant division between the good and the not so good is their relative ability to handle information.

Despite the claims made for them, it isn't the same for the machines. To them, handling information means doing all their adding and comparing very quickly. Or, doing things in a mysterious way which tries to make us feel that they are clever because we don't understand. Databases are usually journeys into the unknown. They don't replace like steam at all; the steam is still there, coming out of our ears as we try to master each different search strategy, and the host of idiosyncrasies that the designers built into the electronic brickwork.

And while we're struggling, we are not paying much attention to Information and maybe this lack of attention, this lack of understanding, has caused all the confusion over what the machines can or might do for us.

If you don't understand Information, don't have expertise in its handling, how can you use an un-

An eye on the I in IT

What is Information? asks Ann Irving

gent machine to help you? How do you know what it can help you with? The evidence is in abundance. Teachers want to find out which is the "best" database or wordprocessing program - but this is an unanswerable question! For each one forces structure and strategy upon the user so that Best becomes relative to the nature of the user, his purpose at the time, the data, the nature of the data, and the quantity and quality of the data.

Best relates to the time of day, your location, how much time you have, and whether or not your innate preference is for auditory, visual or sensory stimulation. It's complicated - because we are complicated. And if we want to see microelectronics as the new steam, we simply must try to understand Information, the tapestry of the human mind. More important perhaps is that we help tomorrow's adults, today's young people to understand.

How else will we develop the machines and programs and delivery systems that will allow man to be Controller? If we allow a half-intelli-

gent system to teach our children, what will happen to their minds? Maybe they won't be even as clever as we are because they won't have developed the flexible thinking strategies that only the human mind has.

The machines, with their half-intelligent understanding of Information, will be narrowing devices rather than expanding devices. A case of "This is what you should think" rather than known and the unknown.

Some of the greatest leaps forward in our development as a nation and as a species have been the results of one mind saying "If this then it ought to be that, but I'll try this instead".

So what is Information, and what does it mean for each of us in turn? Our mental databases and text-processors have no field names, and field widths, no structure or common language, instead they have lots and they are all variable, flexible and infinite! Individual Minds are the only true RAMs. If we pay more attention to Information, less to Technology, and more attention to the human, cognitive skills/strategies for handling Information - maybe Sinclair's steam analogy would hold water. If you will pardon the pun.

We are trying hard to consider such issues in the Microelectronics Education Programme, and are developing courses, workshops, software, and a volume of provocative thoughts (*Infostorms*) on the nature of Information to show a range of meaning and interpretation, and to open up the

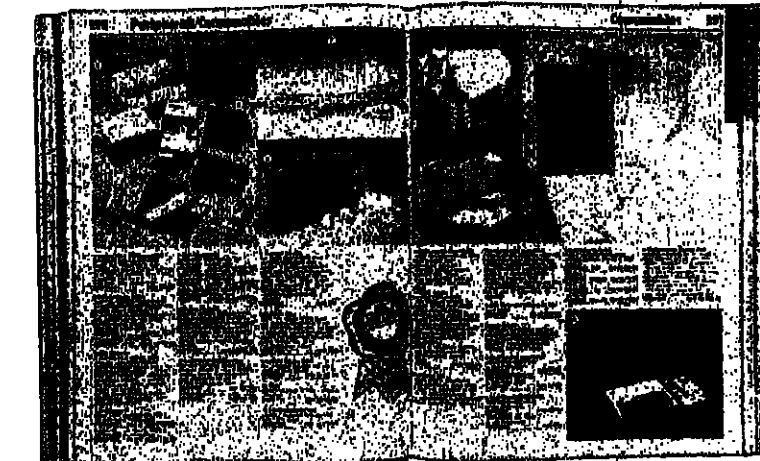
debate about this precious and valuable human, social and economic commodity. We are trying to pay more attention to the I of IT, but the T tends often to get in the way and we often feel alone in this microelectronics inferno. Still, Kipling had something comforting to say: "He travels fastest who travels alone". If only a few of us enter the Information at least some of us may find out how to steam through to the best route forward.

1 Making a business of information: a survey of new opportunities. HMSO, 1983.

2 Infostorms. Infostorms is a collection of provocative thoughts on the nature of information. We hope that it will be published by Harper and Row in the autumn of 1984.

Ann Irving is the national inset coordinator for the MEP communication and information system domain (CAIS) and a senior lecturer in the department of library and information studies at Loughborough University of Technology.

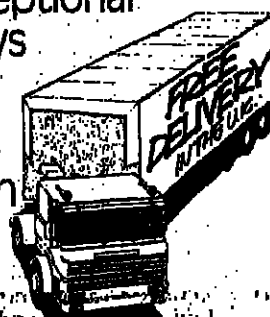
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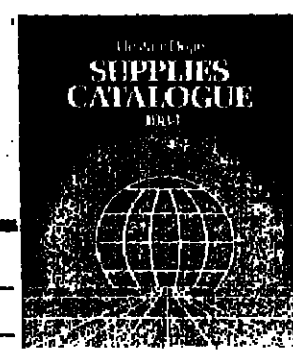
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EXTRA

Judging educational software, like judging a textbook or an audio-visual aid, is ultimately a personal and subjective activity. It all depends on how you want to use it, with your students, in your own teaching situation. Even so, it is extremely useful to have some kind of checklist or aide-memoire for judging any teaching aid - particularly if you are about to make a decision which involves £20 or £30. At one extreme, various scoring systems have been put forward for judging educational programs. One magazine gives programs a score out of 10 (typically ranging from 1/10 to 9/10) based on graphics, sound, documentation, packaging and so on. Another uses an attitude ranking scale for children, ranging from 1 ("best liked") to 4 ("least liked").

At the other extreme, people have suggested that any *a priori*, objective judgment of computer software is an impossible dream - software can only be properly evaluated by actually using it over a period of time with children, in school classrooms, within the constraints of the current curriculum.

This is certainly true of a full evaluation of a program, a textbook



or any other teaching aid. But often judgments and decisions have to be made fairly quickly, in a kind of preview session. This is where a checklist comes in useful.

What I hope to present here is a format for judging educational software, which can act as an aid to "gut reaction" and intuition but does not pretend to be either a scoring system or an objective framework for evaluation. It does not form an exhaustive list but a set of criteria which can be taken one after the other. These criteria can be divided into four main groups: technical, practical, subjective and educational (see Table).

Technical Criteria

- What form does the program take? Is it a floppy disc, cassette, or just a printed listing? Has it been written for your machine? Can you load it into your machine, eg is the disc the right size?
- What input and output devices are required to make full use of the programme?
- Are there any special requirements, eg storage requirements - is your machine's storage large enough? Do other programs need loading along with this program? Does it require high resolution graphics?
- Can the teacher or child alter data statements where appropriate?

Practical Criteria

- These criteria can be divided into three groups: loading and running, presentation, and organization.
- Are there clear instructions for loading the program? Are these instructions in an obvious place or hidden away in a manual?
- Does the program load every time? (Nothing can be more frustrating and disrupting than seeing "Tape loading error" and "Please rewind")



Does the program stimulate talk and discussion in small groups?

Aid to intuition

Jerry Wellington suggests a checklist to help in choosing software

- When working with children.
- Once loaded, are there instructions for running the program? (Does it tell you to "stop the tape" if it's on a cassette?)
- Is the program robust? Does it crash if you press certain keys?

Presentation

- Is there a "menu" which shows, for example, the different content and levels available? Can you get back to this menu easily?
- Does the program itself give clear and readable instructions?

Can you easily get back to an earlier part of the program, return to the start or even escape completely?

- Is the screen clear, readable and uncluttered? How much screen reading does the user have to do? Does the screen "page" or "scroll"? Can you read it in your own time then, for example, "Press space bar to continue"?

Does the user have to press RETURN after each input always, never, or just sometimes, ie is it consistent?

- Is there any valuable use of colour, graphics, and animation, eg in remedial help, or reinforcement of correct answers? What use is made of sound? Can the sound be controlled, or even switched off?

What use is made of upper and lower case letters, eg is there a conflict for younger children between lower case letters on the screen and upper case on the keyboard?

- Is the program for individual use? If so will pupils work one at a time, or all at once, hardware permitting?
- Can the program be used for small groups, say, two or three?
- Can it be used for whole class teaching?

Organization

- Is the program for individual use? If so will pupils work one at a time, or all at once, hardware permitting?
- Can the program be used for small groups, say, two or three?
- Can it be used for whole class teaching?

These can be divided into content, level, aims and curriculum:

- Is the content accurate and up-to-date?
- How much background knowledge, previous content, is assumed?
- Does the program fit into your teaching scheme, or perhaps into a syllabus if you have an examination class?
- Does the program actually teach the areas of knowledge or skill that you want it to?
- Is the program really interactive? Is the user involved or does he just press one key repetitively?
- Does the program package contain suggestions and ideas for further work, eg printed worksheets for you to duplicate?
- Are the aims of the program clearly stated by its authors? Are they

- Is there a scoring or recording facility for either teachers or pupils?

Subjective Criteria

- How do teachers and pupils react to it?
- Does a teacher need to be on hand all the time the program is running? Can pupils load and run it themselves?
- Does the teacher like the program and enjoy using it?
- What are the teacher's intuitive judgments about the value of the program, its presentation, expectations, and motivation?
- Do pupils like using the program?
- Is it interesting and motivating to them? Do you have to drag them away from it? Do they use it again and again?
- Does the program stimulate talk and discussion in small groups?
- Why do they like/dislike the program?
- Does the program build confidence, or shatter it?

Educational Criteria

- These can be divided into content, level, aims and curriculum:

- Is the content accurate and up-to-date?
- How much background knowledge, previous content, is assumed?
- Does the program fit into your teaching scheme, or perhaps into a syllabus if you have an examination class?
- Does the program actually teach the areas of knowledge or skill that you want it to?
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Content

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- Are the aims of the program clearly stated by its authors? Are they

Level

- Is the content pitched at an appropriate level? Can it cope with a mixed ability group?
- Is the language level appropriate? (Some arithmetic programs for junior pupils require a reading age of about 16 to follow the verbal instructions).
- What reading age is required by the program?
- Are the aims of the program clearly stated by its authors? Are they

Aims

- Are the aims of the program clearly stated by its authors? Are they

Curriculum

- These are perhaps the most fundamental questions of all:
- How will the software blend in, or affect, your current curriculum in classroom practice?
- Will the program support it, enhance it, extend it, change it, or more dangerously, totally undermine it?

The four sets of criteria listed above can be used as a checklist for judging CAL programs. But there is one additional and crucially important question that needs to be asked: *what comes with the program?* Several points can be checked:

- Is there a simple, jargon-free users' guide which does not assume that you are a computer freak? Does it tell you how to load the program, run it, and what to do if things go wrong?
- Is there adequate documentation with the program, including (perhaps more technical information and a printed listing)?
- What materials for pupils ("courseware") come with the program? Are there any worksheets, charts or posters; OHP transparencies or other visual aids?
- Are the printed materials readable and understandable, both by pupils and by teachers?
- These questions all need to be asked in making an overall judgment of software. The material that comes with the tape, disc or whatever is as important as the program itself.

All the above criteria need to be checked, in any order, when judging educational software. This cannot replace a proper evaluation of software in the classroom, but it may provide an aid to intuition in previewing software and making a decision.

What materials come with the program: a simple users' guide; teachers' guide; documentation?

Are there suitable and readable pupils' materials to use with, or alongside the program?

What educational aims does it develop: skill and drill; factual recall; understanding; analysis; evaluation?

stated at all? Are these aims achieved or even achievable?

- Can the same aims be achieved without using a microcomputer at all?
- Which of the following educational aims does the software meet?

Knowledge and subsequent recall

A certain subject or topic, varying from knowledge of specific facts and skills to recall of laws and theories. **Comprehension** - does the program require understanding of learned material, eg interpretation, estimating, predicting.

Application - does the program require user to apply knowledge in new situations, eg to understand laws and principles, and apply them in new ways? Is the user required to analyse material into its component parts, and recognize principles involved? Does the user need to understand both the content and form of the material?

Synthesis - this is the ability to put parts together to form a new whole, perhaps the most difficult aim to realize with an item of software. The learner is required to create, for example, a new story, plan, design, or proposal. **Evaluation** - is the user asked to make judgments, eg of a report, a set of data, a statement?

These six aims are part of a hierarchy, based on Bloom's well known taxonomy. In educational terms that means a preference for a Piagetian rather than Skinnerian view of learning.

Logo is a powerful tool for teaching procedural thinking: how to do things. The "turtle" can enhance spatial awareness in the handicapped and be used to introduce concepts of structured programming. Logo is far more than "turtle graphics", and work has been done in creative writing and teaching mechanics but expectations, as at the Centre Mondial in Paris, that Logo could in itself effect a computer revolution, have proved unrealistic.

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EXTRA

Future needs

Richard Ennals on micro-PROLOG

x type loam if x feels silky and not x consistency gritty and x moulds-into ball

The class have described the characteristics of several kinds of soil, and can then analyse a particular sample in conversation with the computer. They can start by asking the computer what type their sample is:

which (x: sample type x)

The computer needs information to enable it to answer, so it replies:

is (sample 1 consistency gritty)? (yes/no)

We answer no.

It asks again:

is (sample 1 feels silky)? (yes/no)

We answer yes.

It concludes:

loam

no (more) answers

We could ask for an explanation of how the computer reached its conclusion, which will clarify the relevant parts of our description. We can add to or amend our description, and test other samples, with our answers being remembered.

We could add facts about where the

different samples were found: sample 1 found-in Molesey sample 2 found-in Hampton

We can describe particular soils as good for different purposes:

'The computer should not be the focus of attention. We should return to thinking about education and training, and the thinking that we wish to encourage, with the computer among our tools.'

loam good for farming sandy-loam good for grazing-sheep

All of the above information can be drawn on in a final question, asking for the soil type of sample 1, where it was found, and what it could be good for:

which (x y z: sample 1 type x and sample 1 found-in y and x good-for z)

Without further interrogation the

answer will be given:

No (more) answers

This program draws its strength from the "expert system" facilities provided by micro-PROLOG. Most importantly, it takes a clear description of a particular subject, in this case a class banda worksheet prepared by Elizabeth Hussain, and opens it up to flexible use, extension and scrutiny.

The computer drops out of consideration except as the means of helping us solve a problem collaboratively, enabling us to go beyond our normal limits of reasoning and information retention.

Micro-PROLOG can be used in any areas that we care to describe explicitly. Research projects are now under way in History and the Humanities, English and Environmental Studies, Mathematics and Science, Cognitive Psychology, Philosophy, Educational Technology and Information Technology, apart from a range of "expert systems" projects involving the law, welfare rights, statistics, medical advice and dam construction.

Micro-PROLOG is available from Logic Programming Associates Ltd, 10 Burntwood Close, London SW18.

No computer expert system can hope to rival the teacher, an "expert systems" on legs. Micro-PROLOG can be a powerful tool to aid the teacher in exploring and explaining his chosen subject. On today's small school computers it can help motivate thinking and questioning.

Already the group at MIT that produced Logo are working on systems incorporating elements of Prolog and Smalltalk. We can start our exploration on some of the microcomputers now in our classrooms: the Research Machines and Sinclair Spectrum already offer Micro-PROLOG and Logo, soon to be joined by the BBC micro and the Commodore 64.

The computer should not be the focus of attention. We should return to thinking about education and training, and the thinking that we wish to encourage, with the computer among our tools.

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John Laski, *Times Educational Supplement*, 10th April 1984
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Siemens's shameful failure to deliver the much-vaunted QL, and their eventual admission that the machine they announced could not be built to its original specification, typifies the erratic progress of the microcomputer market - certainly there have been severe trading problems for many companies - but there is one underlying and inescapable trend: the sale of microcomputers and associated products is still increasing at an exponential rate.

Around two and a half million micros were sold in 1983 and the prediction for 1984 suggests a 50 per cent growth. Software sales are an excellent guide to the state of the



market and according to the Economist Intelligence Unit the market grew by 170 per cent in 1983 with sales worth £127 million. The projection for this year is that the figure will rise to £371 million and that 85 per cent of the programs sold will be for microcomputers costing under £2,000.

It is clear that the microcomputer market is still booming, but the hardware manufacturers have been caught out by a very severe chip famine. It has long been thought that microchips would become so cheap that microcomputers could be produced at a cost similar to pocket calculators, but this dream has suffered a severe setback.

Four years ago there was a glut of chips on the market and the recession forced many manufacturers to close plants and reduce capacity. As the recovery gathered pace, demand for microprocessors and other integrated circuits increased dramatically and although companies are now re-investing in chip-making plants, it will be at least two years before supply catches up with demand.

Chip famine

Ray Hammond surveys the hardware situation and argues that schools are being granted a much-needed breathing space

It is almost impossible now for a new micro manufacturer to find micro-processor chips. Waiting times for chips such as the Intel 8271, used in disc drive systems for the BBC microcomputer, have lengthened to many months and the price of the chip has doubled in the last year.

This situation has several implications for education, but, of all it provides much-needed breathing space. Slow-moving institutions such as schools and colleges have had problems keeping up with microcomputer progress in the last five years, as soon as one computer system was purchased it seemed as though there was a new and better model available for half the price.

It also means that manufacturers are likely to be forced to concentrate on supporting and developing their existing ranges of machines rather than rushing new models on to the market regardless of the fact that many of the promised extras for previous models had never materialized.

The debacle of the QL launch must have cost Sinclair any chance of gaining the contract to build a BBC computer and must have been a salutary lesson to any manufacturer planning premature product announcements.

Acorn have also been guilty of announcing products and then forcing users to wait long periods until they became available.

One long awaited Acorn peripheral is the add-on Z-80 processor. This has just been launched along with the all-important expansion box for the Electron. These two peripheral items will do more for educators than any number of newer, cheaper or better micros as it will allow them to exploit the potential of the technology they already possess.

The Electron expansion will be snapped up by thousands of users who have been frustrated by the machine's inability to communicate. At last the computer can be connected to a printer, and disc drives and other peripherals can now be attached. This now makes the computer a realistic option for schools already equipped with BBC machines which want to expand their computing power within a limited budget. Software to exploit the potential offer will flood on to the market over the next six months and this will undoubtedly include graphics programs, wordprocessing and ministream educational material.

The Z-80 processor for the BBC micro enables the computer to run CPM - undoubtedly the most popular operating system for 8-bit microcomputers. For those unfamiliar with operating systems, CPM stands for "Control Program for Microprocessors" and it was developed by Digital Research of California.

When a disc drive is attached to a micro the program under which the system operates has to be fairly sophisticated. CPM has won its premier position in the 8-bit micro market by being a flexible and easy-to-use program. The Acorn CPM program is supplied on disc which is loaded into the Z-80 microprocessor in the conventional way, but eventually CPM is likely to be supplied embedded in a ROM chip which will start up when the system is turned on and CPM selected.

With CPM thousands of applications programs become available for the BBC microcomputer - at least in theory. The availability of such programs depends on the willingness of software houses to provide CPM programs on discs formatted to the BBC standard, but this is a relatively straightforward task and it is likely that there will be a flood of such programs. The provision of CPM is the final step towards turning the BBC into a full-scale business or scientific micro rather than a hobbyist machine.

The mention of business use may prompt teachers to wonder what ap-

plication CPM ability will have in schools. Most CPM programs are fairly sophisticated and use a library of subroutines which can be further extended, but in this sense there are hundreds of superb ideas emerging. There is one principle, however, which is widely quoted, completely valid, and universally ignored: first decide what you want to do, and then buy the machine that lets you do it.

Unfortunately, many schools - particularly primary schools - have had machines chosen for them, and have subsequently found that the available software is educationally unsound, or that suitable software just does not exist. What is more, there has been a tendency to confuse quantity with quality. More and more teachers are coming to see the provision of two or three powerful packages as more important than the acquisition of countless drill-and-practice programs however breathtaking the graphics or ear-splitting the sound-effects.

Many primary schools are now giving priority to just three areas: information handling, word-processing, and programming. It is this last area, that of programming, that, until now, has caused particular problems in UK schools. For in order to teach children to program, it is necessary to provide them with a suitable programming language. BASIC is not a suitable programming language.

At present, the only contender for a first programming language at primary level is LOGO. American children have been using full Logo implementations for over two years now, thanks to the widespread distribution of Apple and Texas Instruments computers in US schools. Until recently, most British children have been unable to share this experience. This situation is now changing, and so, for practical rather than chauvinistic reasons I will ignore the classic Apple and the now-unavailable TI Logos, and begin with the versions for British micros.

Of the three micros available under the Department of Trade and Industry scheme, only one manufacturer, Research Machines, has had Logo available for any length of time. RML Logo was written at the Department of Artificial Intelligence at Edinburgh University, an institution which has been researching the role of Logo in (mainly secondary) schools for a decade or so. As you would expect, this version of Logo is a very complete implementation, allowing access to the full range of programming facilities such as list-processing, debugging and tracing, and a wider-than-usual variety of control primitives (IF...THEN...ELSE, DO...UNTIL, WHILE...etc).

Unfortunately, RML's sensitivity to the needs of the education sector in getting a Logo into schools 18 months before any other British manufacturer, has resulted in a great deal of sometimes unfair criticism. In essence this criticism falls into two categories. First that it is slow and that some of the vocabulary is cumbersome and ill-conceived. Certainly, both of these criticisms had some validity, but RML has responded positively to them. The new release has overcome most of these defects.

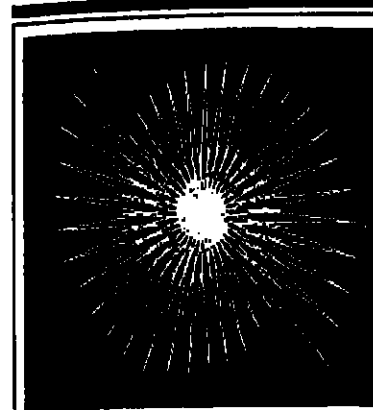
Second, it has been criticized for being "idiosyncratic". In essence, such criticisms boil down to a recognition that RML Logo is different from all other Logos. On the advertising leaflet that accompanies the package, there is a reference to the well-known principle that your first programming language colours your view about computing for ever. The same is true of Logos. RML Logo is different, and unless it is the first one you learn, you may well feel, along with some of its critics, that it is unnecessarily complex.

Perhaps the most controversial example of this idiosyncrasy is the lack of so-called " infix " operators. In plain English, this means that the program: `ADD 1+3 4` instead of: `4+4`. The same is true of subtraction,

multiplication and division, as well as `=` and `>`. This sounds like hair-splitting until you see some examples. Most other Logos let you write statements like:

`IF :LENGTH + :INCREASE = 100 THEN STOP`
In RML Logo this reads:
`IF EQUAL ADD :LENGTH :INCREASE 100 THEN STOP`
Similarly, `2 + 3 + 4` comes out as `ADD 2 ADD 3 4`.

There are two things that have emerged from RML's decision to only allow "prefix" operators. One is that almost all teachers are convinced that their children will be unable to cope with it. The other is that nobody really knows (yet) if this is true. There is a fierce debate on both sides of the argument, but the final decision will be made by the children themselves. However, aware that teachers' dislike of this aspect may turn into a self-fulfilling prophecy, RML have sensibly decided to include both kinds of operators (as in all the US Logos) in a future release.



There are not many signposts to guide us through the quagmire of educational computing. It has all happened rather too fast for a consensus to have emerged. There is one principle, however, which is widely quoted, completely valid, and universally ignored: first decide what you want to do, and then buy the machine that lets you do it.

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Powerful packages

Richard Noss looks at some of the latest versions of LOGO, including the new Sinclair version

the hundreds of thousands of children sitting at home struggling with Basic or playing alien games.

The graphics on Sinclair Logo are not the highest resolution I have seen. When colour is used, this gives rise to some interesting effects. However, I tried to make these effects spoil some Logo designs and failed.

As far as schools are concerned, the advent of Sinclair Logo means that two out of the three DTI machines now offer Logo. There is at yet no BBC Logo. It also means that Spectrum school-users can come out of the closet. What's more, the next £500 from the PTA could buy three or four Logo-dedicated machines.

The other major US source of Logo is Terrapin Inc, who, like LCSI, have their roots in and around the Massachusetts Institute of Technology. Their newest Logo was released at the end of last year for the Commodore 64. It has been attracting much interest, especially since Commodore launched their very competitively-priced hardware and software package (including Logo) at the beginning of this year.

Commodore Logo is a complete implementation with turtle graphics and full list-processing facilities. The use of the Terrapin dialect (as opposed to the LCSI dialect of the Sinclair) results in total confusion for those of us who have to use both, but no ill-effects for anybody else. The differences are fairly trivial, and which you prefer seems, as usual, to depend entirely on which version you saw first.

In comparison with Sinclair Logo, there is good news and bad news. The good news is that Commodore Logo has a multiple turtle facility, which allows the programmer to "speak" to more than one turtle at a time. Unfortunately, Commodore advertise these as sprites which they are not (I'll explain what sprites are in a minute). The bad news is that the manual is pretty hard going; the print is fairly microscopic. Young children would certainly find it daunting. On the positive side, a helpful feature of the Commodore version is the use of three of the four function keys, which allows the user to switch between graphics only, text only, or a mixture at the touch of a key.

Commodore Logo is a disc-based system. Given the extreme cheapness of the hardware, this is no constraint for schools. Mercifully, Commodore Logo insulates the user from the extremely unfriendly Commodore operating system, and, as long as you are not in a hurry, the Logo disc loads quite easily.

And so to sprites. In fact, at Atari Logo, for although sprites have been available for the Texas Instruments machine for some time, and are now (at a price) available for the Apple, neither of these are to be found in any quantities in UK schools. A sprite is a turtle with a difference. Turtles have a position and a heading (they can also have a colour). Sprites have an additional property, a SPEED. To give a sprite a speed in Atari Logo, it is only necessary to set its speed, for example with SETSP 100. Of course SETSP 0

None of this should worry even the most sophisticated school-based user. Any school with RML equipment should not consider using any other Logo or turtle-graphics package masquerading as Logo. Similarly, any school contemplating the purchase of a Logo-equipped computer would be unwise to ignore it, particularly if other memory-consuming activities (such as information handling) are being considered.

In contrast to RML Logo's individuality, the version for the Sinclair Spectrum which is just about to be released, was written by Logo Computer Systems Inc, a Paris-based offshoot of one of the two major American companies involved in producing Logos. LCSI wrote the original Apple Logo, and have since written versions for a range of other machines including the Atari and the IBM PC (at three thousand dollars, a little above the budget of the average UK school).

Despite my initial prejudices about the keyboard I found Sinclair's new Logo excellent. It is a more or less standard LCSI implementation which loads from tape (or a microdrive if you have one), and it possesses the full range of list-processing and arithmetic primitives. It has the standard Apple/Atari documentation which is readable and understandable (and therefore more or less unique among educational software).

As one would expect from the Spectrum, the Sinclair version contains all the "hooks" necessary to make the machine talk to the outside world through Logo. In particular, this means that floor turtles no problem accessed through the idiosyncratic but expressive STARTROBOT command.

All words are entered in the normal Logo way - Spectrum keywords have been abolished. Very sensibly, the Logo user hardly ever has to press more than two keys to get the desired character, as Sinclair have simplified the keyboard considerably. The one exception to this is the exit from the editor, which necessitates going into "extended mode", and then pressing C. I'm sure this will pose no problems in their implementation. In this respect it is not an advance on the Apple version - it certainly does not include the powerful "sprites" of the new Atari Logo. This seems to me a small price to pay for immediate access to Logo to

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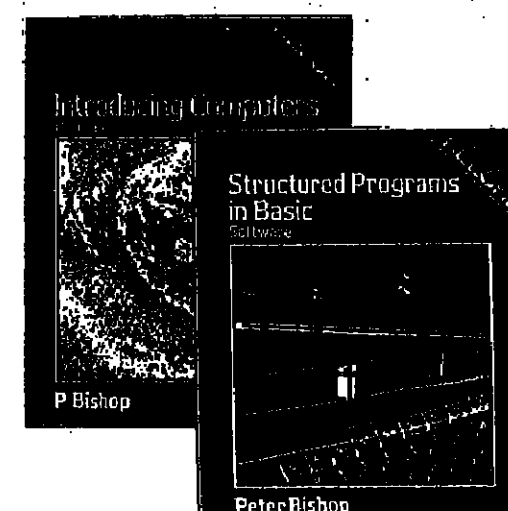
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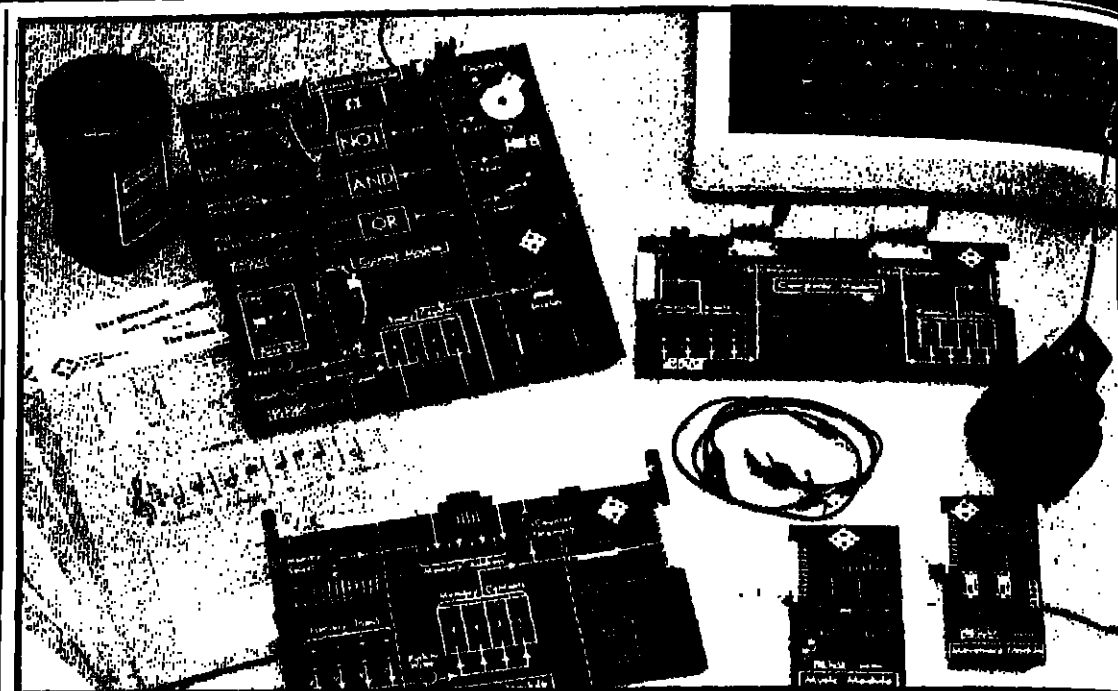
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Programs are now available for BBC, Electron and Dragon micro computers and shortly for Commodore 64 and Spectrum.

Selected titles are currently available from Cheshire Cat stockists including Boots, W. H. Smith, and other major computer retailers.

For further information contact:
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31 Woodbridge Road, Darby Green, Blackwater,
Cambs, Cambs, Cambs.
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Basic technology

John Martin on 'Microelectronics for All'

Over the last 18 months the Microelectronics in Education Programme has been developing a new approach to introducing electronics in schools. The first production batch of these materials is just being sent out to all MEP regions ready for in-service courses during the summer term and the materials will be available to schools from September.

The background to this development was widespread demand from teachers on MEP in-service courses for materials to support the introduction of microelectronics, particularly in the lower secondary school, in a way which was modern in content, which motivated the pupils, enabling them to understand the basic technology and to solve problems with it, and which did not demand high staff expertise.

A working party of teachers and people from the electronics industry and higher education developed a course, Microelectronics for All, a set of six hardware modules and a series of pupil work-cards. It is relatively straightforward for teachers to use and covers the key concepts of microelectronics in a highly motivating way.

Materials have been tried in some 17 schools and detailed modifications made to both the equipment and pupil work-cards. The hardware modules are being manufactured by Unifab Ltd and the pupil work-cards and teacher manual published for CRAC by Hobsons Press.

There are three basic electronic system modules: the decisions module,

the counter module and the memory module. They may all be powered by a six volt battery or a five volt power supply. The practical work of the basic course begins with the decisions module and the remaining two modules are added at successive stages of the building up of the full system. The modules plug together, each having the same design layout with information inputs on the left of the modules, information output on the right and the electronic processing elements in the centre.

The output of the counter module plugs straight into the "address" system of the memory module so that when the counter is incremented each memory cell is addressed in sequence. The information in each memory cell is then available sequentially for use in display or as control data. The three basic modules may also be used independently. Three more modules are used with the basic system and others are being designed for the extension of the basic course. Two are control demonstration modules, one being a "music module" which plugs straight into the output side of the system. Hence the binary information pattern being put into the music module controls the tone of the note being produced. The musical scale increases by a semi tone at each single increase in the binary pattern.

The second control module is a relay operated "movement module" which provides control of a Lego "buggy". Being able to control the buggy's movement has proved the most interesting activity for pupils in the trial

schools. The third additional module is a computer interface which minimises the basic modular system. Input information is processed by the computer to give output information which is displayed on the interface board or the monitor or both. The output information from the computer via the interface board may be used to control the music module or buggy system. The modules, interface and computer together make up a very versatile and easily used demonstration and design-problem solving medium. However, the most complex system set up in the scheme requires only seven wire inter-connections. The modular nature of the materials enables schools to build up a class set of the materials over several years.

Two-day in-service training courses for all the MEP Microelectronics for All materials are being provided nationwide by MEP (details can be obtained from MEP regional information centres) and by Salford University (details from the conference office, Salford University, Salford, Lancs). No previous knowledge of electronics or physics is needed for teachers who wish to attend these courses which will enable them to present the materials in schools.

MEP is currently working on extensions of these materials with new support materials suitable for use in form general studies and additional notes and hardware for use in CSE0 level science and DCT.

John Martin is Director of the MEP Microelectronics for All Project.

Powerful packages

continued
sprites off in different directions and at different speeds:
TELL 1 RIGHT 10 SETSP 100
TELL 2 LEFT 10 SETSP 120
etc.

Now you have a screen full of spaceships moving around (perhaps in different colours). You also have control passed back to you by the machine. That is, while all this motion is going on, you are free to enter commands in the normal way at the keyboard. The movement of the sprites, once set up by a program or by direct keyboard input, keeps going while you do something else (like change the background colour, write a new procedure, or make the sprites change direction).

There's more. Giving control back to the programmer is only exciting if there is a way to control the sprites in a way. Atari Logo provides "WHEN" demons which allow the programmer to set up a condition to control the sprites (for example, "WHEN two sprites collide make a screen explosion and reverse directions of the colliding sprites"). WHEN is a bit like the normal Logo IF, but with a difference. Just as the sprites keep going outside of program control, the "WHEN" demons sit inside the computer waiting for their condition to be satisfied.

When it is, they pounce, do whatever has to be done, and then return to patiently waiting for the next collision or whatever. Meanwhile, the program or whatever the normal Logo cursor has set on the screen to do with as the user wishes. All this sounds like space invaders games, all this sounds like space invaders games, all this sounds like space invaders games. If all this sounds too difficult and esoteric, fear not. I recently introduced Atari sprites to a class of six-year-olds who had some experience of "ordinary" Logo. Within an hour, they were playing around happily altering speeds, colours and shapes, their tried and trusted Apple and floor-turtle neglected in the corner.

Atari Logo is a standard LCSI Logo (like Apple and Spectrum), with very good documentation and graphics. It also (at least on the Atari 800) provides the programmer with a very large memory to use (Logo is loaded by default in a ROM cartridge). This plugging in a ROM cartridge, and the newly-launched educational discounts that Atari are now offering, makes it an attractive proposition for schools.

Which Logo? It depends. But at least the advent of affordable Logo-equipped micros should help to make the decision an educational rather than a technical one.

Richard Noss is Director of the Children Logo Project, Advisory Unit for Computer Based Education, Harlow AL10 8AU.

MORE than half American schools have computers in their classrooms but on average they are used less than two hours a day. This is one of the latest conclusions to emerge from a continuing study of the use of computers in schools by the John Hopkins University of Baltimore.

Prompted by tax incentives in some states and the belief that parents tend to buy the same computers as their children use in school, American manufacturers have been pouring computers into schools and offering next to no training. The result is a lot of computers, which, the joke has it, are brought out on parents' night and otherwise gather dust in a cupboard.

One organization which aims to overcome this shortage of teachers who are familiar with computers is the Stanford Institute on Microcomputers in Education in Palo Alto, California. It is sponsored jointly by the Stanford University School of Education and Interactive Sciences Inc, a non-profit-making organization devoted to the study of computers in education. The Institute runs two five-week courses in July and August, to which teachers come from all over the United States and from other countries. (Interactive Sciences raised \$20,000 in scholarship funds to help teachers from districts serving low-income and minority students.)

The directors of the Institute are Joan Targ and Jeff Levinsky who during the rest of the year teach computing to pupils aged 11 to 14 at the Jordan Middle School in Palo Alto. In setting up the Stanford courses they have drawn heavily on this experience.

The sort of difficulties they have encountered will be familiar to many British teachers: too few people able to use the available hardware; too little relevant software of good quality; and the problem of how to interest girls and minority groups. "At the moment," says Jeff Levinsky, "the computer is dominated by white boys".

Both Targ and Levinsky believe that speed is of the essence: schools must be encouraged to see how computers might be useful before the education system reacts against them, and their strategy is aimed at turning out teachers who will become leaders in their districts. "We hope to encourage teachers on the courses to see themselves as agents of change," says Levinsky.

To this end they adopt a very broad approach, and some fairly innovative — often startling methods. As well as "hands-on" experience of BASIC, LOGO, spreadsheet analysis (best described as an interactive, self-adjusting calculator) and wordprocessing, other options include fundraising; getting the support of parents for the development of computers in schools; writing proposals on how to interest girls and minority groups.

"We get down to the real nitty gritty," says Joan Targ. "We even discuss whether there should be a carpet in the computer room". (It collects dust which is bad for the computer, but it makes the room look more inviting) "... or what to do when bits of pizza fall into the computer".

There are also a lot of visits to Hewlett Packard, one of the largest computer manufacturers in "Silicon Valley", the centre of high technology around Stanford University; to the Stanford Centre for Computer Studies in Music; and to some of the major research departments of Stanford University itself. The idea is to give the teachers a broader perspective and to introduce them to the social and economic context.

Joan Targ and Jeff Levinsky are careful not to put any emphasis on mathematics in computers. As in Britain there is an acute shortage of mathematics and science teachers, one reason being that many are leaving to go into industry, notably the computer industry. In order not to add to the pressures on the remaining maths teachers, the Institute prefers schools to send staff who are not maths specialists. Moreover, pupils, many of whom are turned off by maths, says Levinsky, react better to computers in the hands of — say — social studies or humanities teachers.

One feature of the courses which startles visitors is that children teach the adults in the morning sessions. One of the aims of the policy is to be found in Targ and Levinsky's experiences at Jordan Middle School. Looking for ways of familiarizing as many children as possible as quickly as possible, they hit on the idea of getting youngsters who had already learnt some aspect of



Agents of change

Carolyn O'Grady on a Californian project in which children show teachers how to use computers

computing to teach the others. Thus pupils were taken out of class in small groups and each pupil was taught by one or two of the previous groups. The pupils who had gone through both a learning and teaching session then took their knowledge back with them into the classroom.

Joan Targ and Jeff Levinsky were on hand to intervene if there were any difficulties. It was found that not only did the novice learn quickly, but the pupil/teachers consolidated what they had themselves learnt.

'Teachers on the course want to believe that there is a right way. We try to prepare them for the pace of change, and to face the unique problems of their own areas. There is no right way'

This approach has been adapted to the teaching of adults at the Institute. For some of the time teachers on the course are taught by children from Jordan school — one child teaching two adults one of the following subjects: Basic, spreadsheet analysis or wordprocessing. Later the adults are regrouped in threes with each person having had practice in one of the areas. Each then teaches the other two his or her subject. Tutors are on hand to give help when required.

The aim, says Levinsky, is "to speed up learning and make it fun". The children, he says, make effective teachers as they have usually taken to computing more easily and naturally than their adult pupils will. "And the teachers get a sense of the way youngsters understand this material". The important ingredient, however, he emphasizes, is not the age difference, but the high learner/pupil ratio.

The methods and materials which Targ and Levinsky teach are very different from those in English schools and reflect both the difference in American and British economic and other more general economic and political differences. There is, for example, no national organization such as the British Microelectronics Education Programme to encourage curriculum development, the production of software for education or some standardization in hardware.

The good material is, therefore, being mainly produced for the home and doesn't fit into the curriculum.

However, Jeff Levinsky also defends the use of applications software on more positive grounds. The examples of computer use at Jordan school, he says "are drawn from the real world. The kids learn to write games in

Basic; they learn to make up a bank statement; and they learn to use a wordprocessing system for formatting and other more creative language work."

This very practical approach is illustrated by the fact that the computers are always left "open", so that the children can see inside and learn to do their own minor repairs.

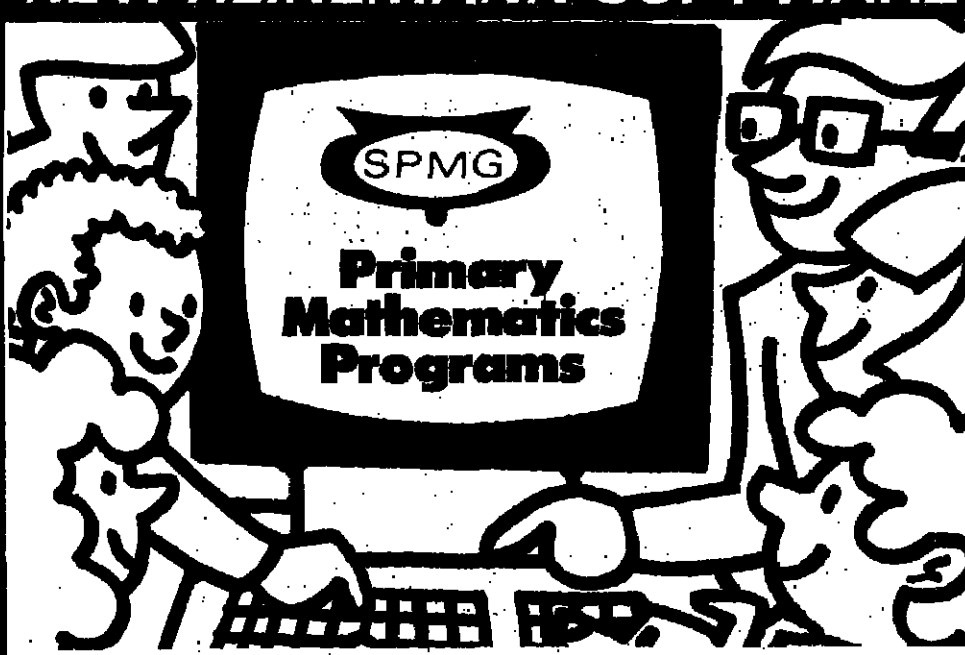
Basic is taught, says Levinsky, because it is the most used and most useful language and because it enables pupils and teachers to write their own programs and adapt others. "It is not our experience," he says, "that Basic ruins you for learning anything else. But we must recognise that computers and languages are changing rapidly. Kids must not get too wedded to any particular language."

Logo, which is so popular in British schools, has not been so enthusiastically adopted in California. "There is a feeling that you lose half the schools because of the mathematical bias which is to be found especially in the turtle graphics component", says Levinsky, who adds wickily a thought which may have occurred to some English teachers but which I have never heard voiced: "So you learn to draw a square, that's no big deal for the kids."

However, along with other languages, teachers are introduced to Logo at the Institute summer schools. As Jeff Levinsky adds: "Teachers on the course want to believe that there is a right way. We try to prepare them for the pace of change, and to face the unique problems of their own areas. There is no right way."

There are signs that the courses which last year attracted over 200 teachers are having an influence. Last spring the Institute conducted a poll of participants at the 1982 summer schools. The majority of the 40 teachers, most of whom had little or no experience of computers before the summer schools, had retained a very active interest in the subject. They had started computer centres, become resources specialists, served on advisory committees and established workshop and in-service training courses. This year because of budget cuts there will not be so many places at the schools, but still over 120 "agents of change" will be better equipped to explore the growing number of computers.

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Versions are also available for standard disc filing systems. References to the Atari are provided for Atari Level One — a 512K ROM with 800000 bytes of RAM and 800K bytes of ROM.

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> are going
into more
schools...

> than any
other micro...

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and economy...

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> be inter-
connected.
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EXTRA

IRWIN

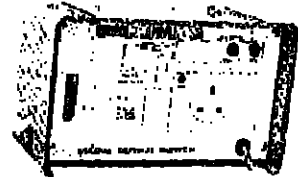
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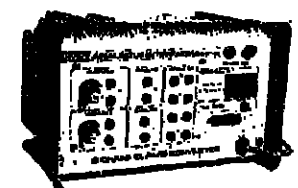
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-SOFTWARE-

"Yes," people say, "but what does the computer do that you can't do with books, paper, chalk and talk?" It's a valid question that demands a considered answer: after all, money spent on software is money not spent on books. Clearly, there should be more to the enterprise than merely raising students' consciousness about the likely impact of computer technology; arguably that can be left to the tender mercies of computer studies departments or the looming presence of the Technical and Vocational Education Initiative.

English teachers, while recognizing that they do have a role to play in establishing computer literacy, should be concerned above all to make full use of the technology, augmenting and extending English work by exploiting its potential: as a writing instrument (possessor of what Esmor Jones and Anthony Adams in *Teaching Humanities in the Microelectronic Age*; OUP 1983, called automatic Tippex) as a framework for talk, and as a highly sophisticated information storage and retrieval system.

Our experience has led us to the conclusion that, in time, the micro-computer can be at least as useful an adjunct in the English teacher's classroom as a television, video or tape recorder. With imaginative software it can motivate students very powerfully; respond to instructions at phenomenal speed; lead students unsuspectingly into considerations of language use; radically alter the nature of the writing process and free the teacher to participate in the lesson, rather than to over-direct it.

MATE (Micro Applications to the Teaching of English) has evolved from a group of English teachers in Berkshire schools who felt that the most appropriate way of tackling the problem of a dearth of creative software was to design it themselves. Since that decision, some eighteen months ago, MATE has produced two extensive programs, both with a wealth of associated materials, and programming has now begun on the latest project: two programs designed to explore both the language and the background to a major English novel. All these programs should be commercially available within the next year.

The process of evaluating the early programs has highlighted many of the dangers as well as the exciting potential of the micro.

★ ★ ★ ★ ★

Tuesday morning in a comprehensive school in Maidenhead. Class 3Y is some weeks into *Space Programme Alpha*, one of MATE's programs, still



Sense of responsibility

Richard Knott and Joan Ashton on using the micro in English

in its raw state! The teacher describes the activity: "... it includes a computer program, an assignment manual and other written material and the whole package is intended to develop the full range of English skills ...". Used to working in groups, the children are clearly aware of what is expected of them: three of the groups are engaged at various points along the simulation, sitting around tables in a classroom where the walls are covered with maps, drawings and writings related to the simulated space mission.

The fourth group is alone in the stock cupboard with the computer, responding to the program and recording their reactions in "the Captain's log", a cassette recorder which will be the focus of the group's follow-up activities once the program itself has been completed.

The teacher's comments on class 3Y are relevant here: "their previous teacher had expressed concern over the general lack of motivation and effort. After a few weeks of teaching them before this activity, I also felt concerned about this ...".

As part of the evaluation process, an outside observer made the following written comments during that lesson: "A group of seven (too large?) in front of the VDU. A disappointingly fuzzy picture. The four girls and three boys are very enthusiastic, almost ignoring me as an outsider. The talk however, as yet is very hectic and there's not much real listening going on ... Once they've started determining roles, it would be interesting to see them being encouraged through drama to confirm those roles. The instructions sometimes lack clarity, both in terms of the use of colour and through misuse of language. It's impressive how the children become very good at listening once there is a real problem to solve."

It is clear that only through trial and error can program designers ensure that software achieves its objectives: "fine-tuning" after field-trials is essential. Teachers, more than children, will have trembling hands through technical fear, so instructions on loading programs etc need to be precise and simple. Equally, the place of the program within the overall design of the scheme of work needs to be carefully and systematically defined, even to the point perhaps of easily read, non-patronizing lesson plans. At the same time, faced with a glut of paperwork to read, many of us have a commendable tendency to opt out.

In evaluating software, it helps to look at the activity through the children's eyes, recognizing that their perception is an often-granted matter. Teachers, and that such insights matter. Fifth year computer students at Altwold School, Maidenhead were asked to comment on program design: screen displays, memory use, by-passes to avoid complex or long-winded instructions/procedures. The groups, who used the program as part of their English work, commented usefully afterwards on several aspects of it: the sounds, graphics, the degree of "user-friendliness", the need for the teacher as an additional helper, the parts they particularly liked or disliked. Their response was detailed and enthusiastic.

"It brought us together in groups and in doing so made us work as a whole instead of as an individual which

is much more enjoyable".

"It gave us a special sense of responsibility."

"You learn more by talking about things."

"We enjoyed the responsibility of making decisions".

Interestingly, the designers felt that some of the sound effects during the program would be disliked or might prove distracting; in fact, the children responded very positively, demanding more electronic sounds.

The questions that teachers of English should ask when considering the purchase of software are implicit in what we have described above. Future to confront them may result in buying program which proves as irritatingly irrelevant as the well-intentioned acquisition of a class reader that no one can bear to read.

- Are the instructions for loading the program clear?
- For what machine is the program designed?
- Is the program been written in schools?
- Is the teacher's manual useful? Does it provide the right degree of support and guidance?
- Is it possible for the teacher to change the program?
- Does the program clearly add a new dimension to English activities?
- Does it come as part of a courseware package?
- Are the children clearly encouraged through this program to read, write, talk and listen with a purpose?
- What skills does the program claim to develop? Is that realistic?
- Will it be relevant to enough children/classes/members of the department?
- Does it pre-suppose groupwork?
- Is the courseware attractive/interesting/durable/able to be photocopyied?
- Is the program intelligently and purposefully linked to the curriculum?
- Is it suitable for our mixed ability/banded/sexed situation?

Space Programme Alpha is currently still being improved, but we feel, with the children who have already experienced it, that its use of the computer adds to the vitality and variety of the language environment. The kind of program lays stress and value on the important fundamentals of English and succeeds in charging the pupils with the most worthwhile kind of excitement - when they are truly engaged and involved in the process of learning with each other.

Sally is a member of class 3Y who's writing an account of the mission on the benefit of the tape-recorded "Captain's log": to us her involvement is reassuring, evident and highly laudable.

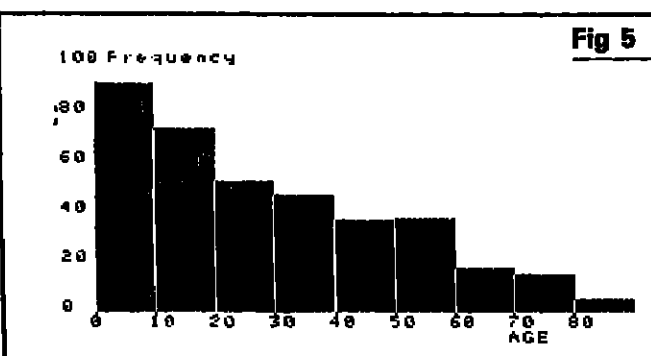
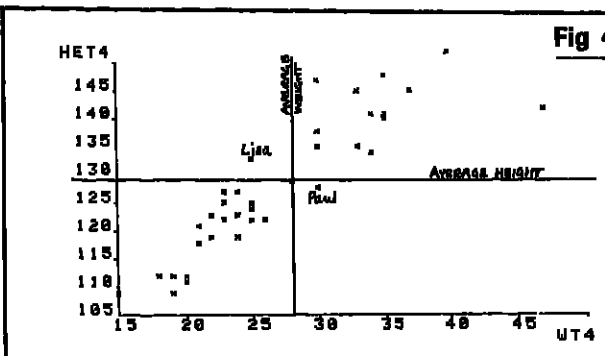
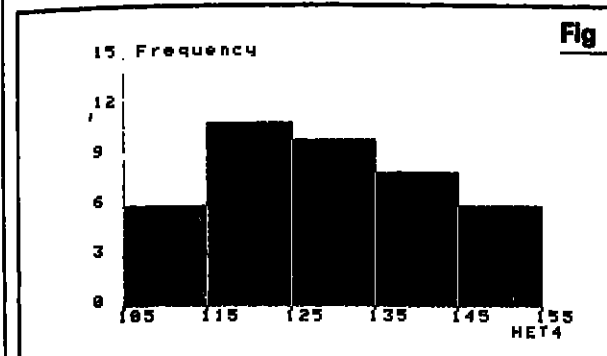
Sally: "Everything was fine until something disturbed the ship's navigation system. This is my fault - I've been electronic aids I get lost very easily - everyone blamed me and shouted and hurried insults and saying I should have done this and that and not what I did. Now, orders and people who don't know better than me is one thing, I can't stand it."

Richard Knott is English Advisor at Berkshire. Joan Ashton teaches in the English Department at Altwold School, Maidenhead.

EXTRA

Behind the figures

Joe Johnson describes data handling in the primary school



The four programs, the use of which is described in this article, are EDITOR, DISPLAY and RELATE from the Microtechnology Advisory Service, Macclesfield House, New Road, Oxford, OX1 1NA (available for the RML 380Z or 480Z at a price of £11 each on cassette or £11.50 on disc) and QUEST from the Children's Advisory Unit, Enderby Road, Hatfield, AL10 8AU; available for BBC and RML machines at a price of £15 for the cassette version, £27 for a cassette and disc package and £27 for a package containing two BBC discs. The program is sold at half-price within the Chiltern computing region.

- (C) List in order of "Y"
- (D) Graph (Scattergram)
- (E) Swap axes of graph
- (F) Change "X" axis
- (G) Change "Y" axis
- (H) Choose columns of table ("X")
- (I) Choose rows of table ("Y")
- (J) Use different data
- (K) Finish

With Display and Relate once the children have presented their data on the screen they can dump the screen to our printer using a single letter command (P).

MEASURING TOPIC

In January, 1983 the children began this topic by measuring their height, weight, hand span and foot length. They each combined all results for their year group into a table showing all their names and measurements. The children went on to measure all the children in the younger class. This information was then handled in different ways. Graphs and histograms were drawn and labelled. Ordered lists were made and some older children made pie charts. As part of this general work three fourth year girls used the computer. First of all they prepared the information to be entered into the computer.

They worked very hard typing in the information and I spent part of the lunch break correcting one or two obvious errors in the datafile ready for the children to use in the afternoon. We loaded Display and then our datafile which the children had called "School". The children discussed what to display and they decided to display the heights and ran into their first problem. The computer could not handle a huge number of separate columns and lumped single entries together as "others".

We had already done some grouping of information in our work in the classroom and so the children went back and rewrote the information, grouping it where it was appropriate. Now the children had a table of measurements arranged in a particular way especially for the computer: not an ideal situation.

The arrival of our printer coincided with the arrival of a new version of Display and a trial version of a new program, Relate. The new version of Display could put the data into different groups which were under the control of the children. There was still no printer option within the program, but I asked and got the magic words to do high resolution dumps from the screen to the printer.

The children could then copy the words from the screen on to their bar chart, histogram or pie chart outline. We could now print two different bar charts and compare them directly. It was decided to collect the same measurements as the term before with a longer term view of collecting this information every term, which would eventually enable older children to draw profiles of different aspects of their own growth.

With the new hardware and software I brought the three fourth year girls back to the computer and let them re-examine their "School" datafile and print off several bar charts, histograms and pie charts. The children immediately appreciated the new facility

Fig 2
41 values
The largest value is 47
The smallest value is 15
The difference (range) is 32
The half-way value (median) is 25
The average (mean) is 27.22
The most common value (mode) is 30
The standard deviation is 7.95

Fig 3
41 values
The largest value is 152
The smallest value is 109
The difference (range) is 43
The half-way value (median) is 127
The average (mean) is 128.6
The standard deviation is 23.3

in the Display program - "put the data into groups" as they were spared the need to do the grouping on paper. They could now alter the number and width of the groups.

The conversation of that small group was reward enough: "What would happen if I did this? How was that one different from the last one? The shape is different, why?" The children were making hypotheses then testing them, talking with each other and building on each other's thoughts and ideas. They were immersed in this activity for some time.

Fig 1 shows the heights of children in the whole school grouped in blocks of 10 centimetres.

Fig 2 and 3, were made using option (E) of Display.

The new set of data was added to the first file and we discovered several inaccurate measurements which the children had made the previous term. How could a child's handspan decrease by four centimetres in a term? Human error was the answer! This group also dabbled with Relate and printed off a few scattergrams showing relationships between height and weight; by combining lines showing averages, again noted down from Display, they could make a short statement about different children as represented by dots on the scattergram.

For example: Paul is below average height and above average weight. Lisa is above average height and below average weight.

The Fig 4 scattergram made using Relate compares heights and weights of children in the school. I have drawn in lines showing the averages for both and marked the crosses which represent Lisa and Paul's measurements.

The computer did bring something new to this situation. It made it possible for the children to see the information organized in a variety of ways under their control, quickly. Using the computer meant that they were free from the physical chore of using paper, pencils, ruler and pen. They could concentrate on thinking about the information.

Final improvements to the programs made by autumn 1983 enabled the children to print their information with ease. The children now keep a record of their measurements each term and this information will be a valuable resource for future work.

YOUTH CLUB SURVEY
In the autumn term of 1983 I used our data handling programs to interpret a survey by Parent Teacher Association organized at the fortnightly Youth Club. They wanted feedback on what activities the children wanted or liked at the club. I entered the answers to the 10 questions of the survey into a Quest datafile.

A group of second year junior children then used Display to print out pie charts showing the answers to the height and above average weight. The children coloured the pie charts in with

continued on next page

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Bob Sparkes is also author of *The BBC Microcomputer in Science Teaching*, a book which stresses the central role of the micro in science teaching, how it can be best exploited, how the micro can be interfaced with laboratory equipment and plenty of program listings which give specific examples of good programming.



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EXTRA

EXTRA

More like adults

Peter Heaney on wordprocessing in the primary school

This is a report of a case study carried out in a primary school with children from two classes, primary six and primary seven. The specific aspect investigated was the use of a word-processor (EDWORD) and the possible role it might have in the development of written language. Since the study only lasted three months, no conclusions can be drawn, however observations can be made and indications outlined.

Initially the children worked in groups and then they entered their text on to the screen individually. These sessions were short, only a half hour, because only two machines were available. The children then discussed their text with the teacher, and what they had wanted to say and the relationship between the result and the intent.

The major problem was the children's lack of confidence. They wanted to measure their "composition" in terms of the teacher's approval. A neutral response or question from the teacher was interpreted as disapproval and constituted the motivation for editing the text.

A lot of time was spent developing the idea that the criteria for judging the work was how well it matched what the child wanted to say. This was a process of moving from an interpretation of writing as an exercise in linguistic logic with a perfect model, to an idea that writing was a form, albeit sometimes very inadequate, for representing and communicating thought and feeling; with the final right of editing belonging to the author.

Once the children appreciated that this was the situation, they became more relaxed and eager to show their work to the other groups and explain it. However it was some time before this stage was reached.

The use of groups enabled this development to be viewed from a different perspective. There was an eagerness to spot each other's grammatical and spelling errors. Each child typed in a few sentences and then they got down to the business of tidying it up.

The children accepted the popular understanding of revision, as looking for spelling, punctuation and hand writing errors, but not examining the content of their work in any great detail. The children were encouraged to question each other and explain what ideas they were trying to express.

decide on their own topics, what they wanted to write and indeed if they wanted to write. There was no coercion. It was assumed that the word-processor of itself would motivate the children to want to use it and that they would move from wanting to use the technology to writing using the technology as a tool to facilitate their own writing.

Each child or group of children had two formal timetabled sessions each week with the wordprocessor. There were two wordprocessors available for their use. They were then free to use at least one of these on an informal basis if they had some free time during the remainder of the week.

After each session the children obtained a printed copy of their work for that session. Sometimes this was only a few lines, but they were encouraged to take this away and use it as a basis for further thought and discussion before their next session.

Again this type of interaction took time to develop and initially was quite disjointed and unproductive.

The ability of the wordprocessor to allow the children to edit text easily and with a printer produces far more than development of written language which would concentrate on the content of the text rather than the grammar.

This notion is found in Seymour Papert's book *Mindstorms*: "I believe that the computer as a writing instrument offers children an opportunity to become more like adults, indeed like advanced professionals, in their relationship to the intellectual products and to themselves."

The role of the wordprocessor in development is central: it places the child in control of this process of cognitive awareness. Its editing facilities allow easy revision, being in children from initial consideration of spelling, grammar and handwriting errors.

With a printer the child can accumulate fair copies of his creative work; when held in anthologies are a personal record of his work.

The evidence indicates that the microcomputer and wordprocessor will have a very important role to play in the development of children's cognitive awareness and its illustration in their language, both written and spoken.

There is a growing use of computers in schools but there are concerns from pupils, parents, teachers and the world of work. All the concerns may not be applicable to every school or college, but they indicate that the great investment in computer hardware may not be producing the desired results.

Teachers' worries centre on what use children make of computers and what effect this has on other curriculum possibilities. Some children ignore school computers because their home computers can offer them the same fare in more comfortable surroundings and without the added competition for time on the machines. Others, particularly among the girls, are appalled by the attitudes displayed by the programming and video games junkies, and decide that there are better ways of spending their time.

Many parents buy home computers because they are convinced that this will be educationally valuable, in some vague and undefined way, although they often find that the sole use made by their children is for computer games. Such parents often look to the school to provide some more worthwhile transferable skill.

The idea of familiarity and confidence with computer systems is something that local employers have stressed as more important for all pupils than enormous sophistication for the chosen few. The Croydon Certificate of Computer Competence is part of an overall plan, which includes generous provision of hardware and software linked with the necessary in-service training, which hopes to make all pupils aware in a practical way of the potential and limitations of information technology for their work and leisure.

The certificate was the idea of Ray Collins, head of computing at Moses Hill High School in Croydon, who saw it, among other things, as a means of training pupils to be "computer monitors" for other teachers. He was concerned that other teachers would not use the computer in their lessons because they feared that it would go wrong. Ray's idea was that pupils who had been awarded the appropriate level of the certificate would be able to set up the equipment and provide the teacher with technical support where necessary.

These ideas came to the fore just as Croydon was undertaking its review of the curriculum in response to the Secretary of State's request. The Information Technology Working Party was attracted to the idea of using the certificate as a means of making assessment in the subject practical and relevant to the pupil's needs and interests.

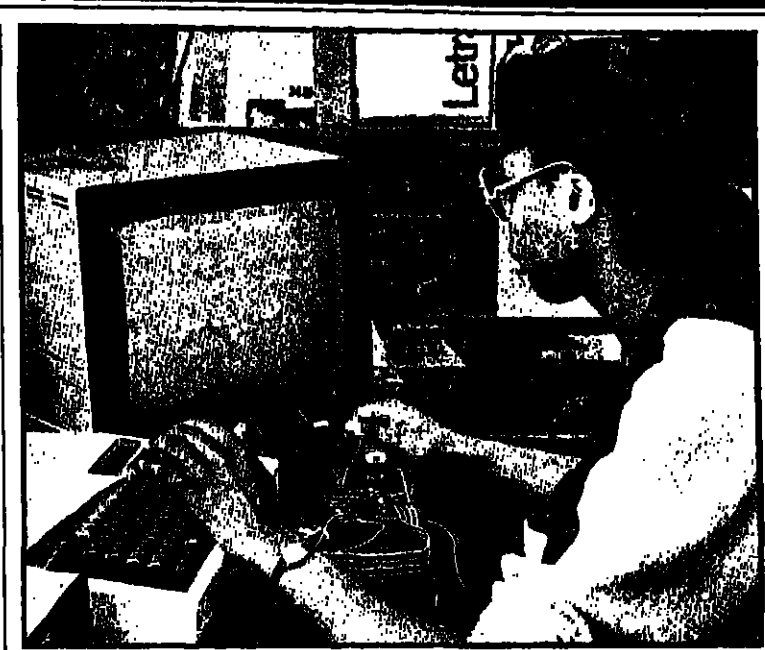
The certificate has four levels: elementary machine usage; applications; communications; advanced use. Each level can be seen to cover a different aspect of computer knowledge and skills. The purpose of the different levels is to allow students to work at their own pace and to gain confidence by rewarding positive achievement.

The first level is intended for beginners of any age, whether in primary or secondary school. It is worth stressing, particularly in the context of primary schools, that the checking of a pupil's competence should be carried out while the pupil is performing some worthwhile task rather than as part of a formal test. If the teacher has any further doubts about the pupil's competence then these should be clarified by a conversation with the pupil in class or club activity.

"Elementary machine use" tests the pupil's ability to connect the various parts of the machine, switch it on, load and run programs. An essential part of running a program is knowing how to cope with various error messages whether produced by the program or the operating system.

Pupils are also expected to use a program which involves the creation, storage and re-use of a file separate from the program. This entails knowledge of how to use either disc or cassettes so that files are not lost due to machine failure. At this elementary level it is also useful to know how to use a screen or line editor, whether to change lines in something like a LOGO program or the data statements in a BASIC program.

This last condition is the one which has caused the greatest disagreement among the trial schools as it comes very close to the traditional programming skills which the early stages of the certificate hope to avoid. The final section at this level is to see if pupils are aware of the significance of various



Practical assessment

Paul McGee on Croydon's Certificate of Computer Competence

everyday computing terms such as "32K" or "floppy disc".

The second level, "Applications", currently covers wordprocessing and information handling. It is significant that two years ago when the certificate was first discussed, no-one considered this as a primary school activity, partly because the school would need a disc drive and a printer. Today many primary schools have the necessary equipment and are doing work in these areas.

Although this level is not a typing test, the pupil should show reasonable familiarity with the keyboard and a sensible attitude to the organization of the working environment. For example, if documents are being typed or printed, the keyboard and the screen should be arranged to make typing a straightforward process.

Much of the assessment in information handling is really only a preliminary to using a system to solve some worthwhile problem. This will take most pupils several hours spread over a few weeks. Pupils will have to see the importance of the initial work of file design and data capture which will precede computer usage.

Many schools will not immediately be able to carry out the work in "Communications" because they do not possess the necessary telex and viewdata systems. The certificate was drafted when we were optimistic about a Department of Industry scheme to help provide such facilities in schools. The skills are still seen as important and Croydon will have to provide the facilities for its secondary schools in the next financial year. In the long term, the knowledge and skills tested by this level will be more important than programming skills needed for the next level.

While elementary machine usage could easily be attempted by all pupils in the primary school, "Advanced skills" may well be suitable for only a minority of upper secondary pupils. It covers programming and more sophisticated use of the operating system. It is deliberately intended that these skills are not seen as important for all pupils as the straightforward use of computer.

After two years of development the certificate is due to be formally launched by the local newspaper, *The Croydon Advertiser*, which is sponsoring it. The *Advertiser* will print the certificates and necessary booklets as well as publishing the names of winners of certificates. This means that the advisory staff in Croydon can concentrate their energies on providing the in-service training needed to ensure compatibility of standards between schools.

The certificate will be available to a small number of secondary schools later this term with the first certificates being awarded in mid-July. Other secondary schools will join the scheme in the autumn of 1984 and primary

Courseware

Peter Loud and Andrew Fluck describe the Milton Keynes Diploma in Microcomputer Applications

In the TES, July 12 1983, we reported our setting up of the Milton Keynes Diploma in Microcomputer Applications. In spite of the article appearing in the quiet summer period when teachers are preoccupied with the problems of driving to the south of France, we had a tremendous response in the form of 40-50 letters from schools, colleges, polytechnics and even a university. They came from all over Britain and even a few letters from abroad. Almost all of the letters were very enthusiastic about our new approach to teaching computing. The replies included a small number from publishers and also one from the Royal Society of Arts who saw this as a developing area in computer training.

For those who missed the article let me briefly summarize. We felt that there was a need to translate the "Work skills training" approach of the Information Technology Centre into a syllabus suitable especially for the Technical and Vocational Education Initiative and industry. We therefore drew up a new syllabus, complete with specifications for assessment, which we thought would be an excellent preparation, prior to starting work, for students who decided to return for one year in the sixth form. When we had prepared syllabus we were delighted to find that local industry and commerce were very enthusiastic and supportive of our work, and even suggested that they might be interested in sending their staff on such a course.

The course concentrates on training people in the use of microcomputers in business, rather than the normal computer studies approach which teaches a little programming and the theory of the computer system. An analogy could be that we aim to train people to drive cars while others teach how engines work. The main topics on the syllabus are: computer and keyboard familiarity; wordprocessing; databases; viewdata applications; accounts/business packages; commercial/industrial visits; business project.

Along with the syllabus we proposed a test specification for each topic, so that individual teachers could draw up their own assessment procedures to suit their facilities, but at the same time minimize the subjectivity in the testing.

We are now running the course in several schools in Milton Keynes and schools throughout the country have written to say that they are following our syllabus. Although we are rather pleased with the progress of the diploma it has been hectic establishing the syllabus in such a short time. We hold regular meetings of teachers in Milton Keynes who are teaching this course so that we can get together to compare notes and assessment material. At this stage it is probable that none of the teachers have yet developed the full set of teaching and assessment materials; we are, quite literally, developing the detailed course as we go along.

We have developed several variations on the basic theme for a variety of courses, eg adult evening classes and YTS computer literacy. In all cases the approach is meeting with tremendous success. The most interesting development of our business applications approach has been with the RSA. Together we have developed a syllabus which will be offered by RSA from next September. This will be very similar to the MK Diploma, although it will incorporate an extended keyboard section. The certification by RSA will almost certainly result in the widespread acceptance of this approach in colleges and schools, and by the business world as a useful qualification.

When we started this work there was little suitable software available. We kept our fingers crossed and hoped that it would appear before we started teaching some modules. We now feel much more confident as cheap, easy to use packages appear on the market.

At present, one of the big problems is that few teachers have much experience with this type of computer use; most teachers have concentrated on programming. We feel that as more computers become available, and staff have more opportunity to use the equipment, they will become aware of the value of applications packages.

If you would like more details of the Milton Keynes Diploma in Microcomputer Applications please write to Peter Loud, Burroughs ITEC, 5, Erica Road, Stacey Bushes, Milton Keynes, MK12 6HS.

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Behind the figures

continued from previous page

different colours and then carefully wrote a description of what the pie chart was about, for example, one pie chart shows that most people at Tuesday Club like having snooker, football and table tennis. Eighteen people said Yes and eight people said No.

Once the pie charts had been completed they were compared and sparked off more discussion among the second year group. At the following club they were displayed and discussed.

The children involved in this activity were not able to construct accurate pie charts of their own but they did grasp the slice of cake concept of the pie chart and were able to interpret the information.

ONE HUNDRED YEARS AGO

In the spring term of 1984 I took the children to our local churchyard and asked them to note down the particulars of any of the gravestones of people who had died between 1884 and 1914. I had, of course, received permission from our Vicar.

With some parent help I had already prepared a Quest database of the 1881 Census of our village and two fourth year children used Quest to see if any of the names from our churchyard appeared on the Census records. Surprisingly only four names coincided but fortunately two of the names, Dandridge and Wood, had relatives still alive today. The children were able to talk to them at our Senior Citizens Club.

It is as well to mention that copies of original documents should be available, where possible. Census data on the

Behind the figures

computer looks very antiquate compared to copies of our local Emancipators record sheets written in 1881.

With the large number of individual records involved it was not immediately possible to enter the Census data into Display or Relate but the answer was so simple. At home I fed in the Quest data file and saved school fields by using Print Age Sex M example.

It took a little time to combine all the interesting fields so that the records would successfully load into Display but the time was well spent and the children were able to use Display and Relate to illustrate aspects of the Victorian Southampton.

The fig 5 histogram was made using Display and shows the age distribution of the 379 inhabitants of Southampton in 1881 grouped in blocks of 10 years.

The children followed the top history part of the previous histogram and printed a more detailed analysis of inhabitants aged between 0 and 20. This led to discussion about child mortality, illness and disease in Victorian times and comparisons with the today.

Entering lengthy data files into time and has dubious educational value. The correction proved useful for this. The correction and organization of datafiles ready for children's use is essential to prevent disenchantment and boredom. Look for opportunities in your work with children to use this resource and actively collect information which will be useful in the future (local history weather records etc).

Joe Johnson, Jr, Headmaster, Stadhampton Primary School.

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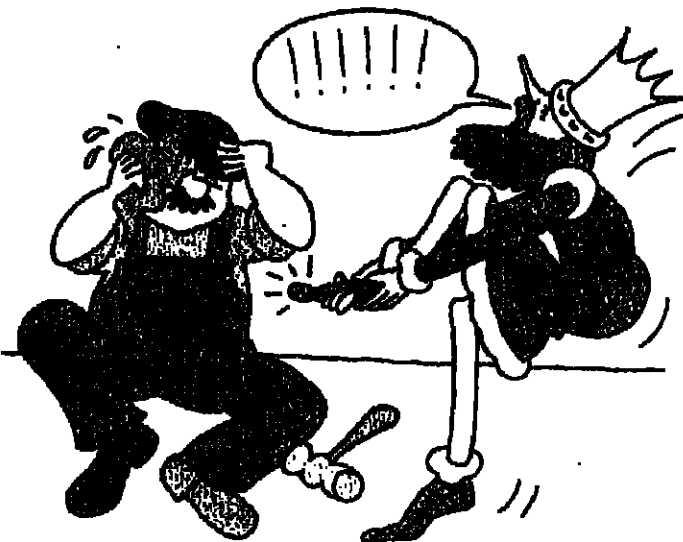
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EXTRA



"Radio Thin King": some cartoons used in the interactive computer programs

On the air

Martin White on telesoftware

On September 20 1983 the BBC launched its Telesoftware Service, the first public service of its kind in the world. Two of the computer programs broadcast as part of the opening flourish were written by the team from the Telesoftware and Primary Education Project at Brighton Polytechnic and were subsequently modified and re-broadcast as part of the project's regular software output.

For 40 primary schools in Wiltshire, Hampshire, East Sussex, Kent, Leicestershire and Sheffield telesoftware had already been a reality for some six months prior to the official launch date. Each school had been equipped with an early version of the Acorn teletext adaptor and had taken part, some extensively - others to a lesser extent, in field trials aimed at getting the hardware and the software debugged and operational.

The decision to introduce telesoftware into the primary sector had been taken over a year before the service became a reality. Experience with the earlier, closed project in the secondary sector had demonstrated the power and the potential of telesoftware and the Department of Industry decision to assist primary schools to acquire microcomputers encouraged the project steering committee to enter the relatively uncharted waters of primary microcomputing.

The project has not been the unqualified success that we were looking for when the field trials began a year ago. Many of the 40 schools are still having hardware problems and even when all the equipment works well the reception of teletext pages using the BBC micro is not as reliable as a standard teletext TV receiver. For many the software has been disappointing - too similar to lots of other software available elsewhere.

The team of programmers - six of them supported by an MSC community programme - have had to learn to live with the requirements of the BBC's Ceefax computer and its accompanying software which takes a program written in BBC BASIC, re-assembles it in a compressed form to save space, splits it into "pages" to fit the Ceefax format and adds a header to enable the teletext adaptor to unravel it all as it is received over the air. There were many occasions on which new techniques, including the broadcasting of compressed graphics routines, failed to work on broadcast even though they worked at Brighton. Now, however, the fact that sophisticated programs are being broadcast and downloaded as an everyday occurrence is due in no small measure to enthusiasm and tenacity.

Technical problems largely dealt with, the programmers are now concentrating on producing the open-ended, interactive, data handling programs which the medium can support so well. Three such programs are scheduled for broadcasting during the summer term.

What then are the advantages of telesoftware to the primary teacher engaged in this project? First, an interesting experiment was carried out during February when a suite of three programs was broadcast at weekly intervals to coincide with the broadcast on Radio 4 of the English Language programmes *Radio Thin King*. The producer of the radio programmes, the

Project's senior programmer and a polytechnic tutor worked together to produce interactive computer programs which used the same cartoon characters and the same music as the series, but which provided additional experiences.

This package of radio programmes, printed notes and computer programs is the first attempt at combining software with other, more conventional, educational broadcasting. Preliminary evaluation is sufficiently encouraging for the suite of computer programs to be modified in preparation for re-broadcast in the autumn and for the idea to be extended to other subject areas.

Second, each teacher can play a part in designing each program. Program specifications are often initiated by teachers, and this is to be encouraged. However, often they are unable themselves to produce a coded program, and do not have the time to make detailed changes if the program they receive is not quite what they want. In the case of the Telesoftware Project's programs teachers complete detailed evaluation forms each month which are studied by the Project's Research Assistant. Suggestions for modifications are discussed and, if in the general interest, implemented and a modified program broadcast.

Two programs have reached issue number four and several others have been modified at least once. By this means software is continually refined until teachers in all 40 schools are satisfied, knowing that they have been able to influence the design and implementation of new programming ideas. For this process to take place using conventional distribution techniques would be slow and costly.

Third, teletext pages broadcast as part of the Ceefax and Oracle services are in reality, volatile accessible data bases. The volatile nature of this type of database helps this sort of program to remain fresh and attractive. Similar programs, drawing on existing and as yet unused teletext pages are planned for the autumn.

The 40 schools taking part in the Brighton Project are a minute fraction of the 25,000-odd primary schools which could receive telesoftware. Whether more schools wish to will depend on the quality of the software provided, the ease with which downloading can be accomplished and the method of funding the production and distribution.

At the moment, telesoftware is free, once the hardware has been purchased, but it is doubtful whether this situation can continue indefinitely. It may well be that educational telesoftware becomes part of general educational broadcasting and is funded accordingly. Equally schools may have to purchase a "key" which is needed to complete a broadcast program before it can be run.

Such matters, including the thorny problem of copyright, will need to be resolved before a general educational telesoftware seminar becomes a reality.

Dr Martin White is a principal lecturer in the Faculty of Education, Studies, Brighton Polytechnic, and director of the Telesoftware and Primary Education Project.

Old technology?

In the light of the increasing challenge from videos and computers, Paul McGee reviews five tape/slide sequences about computers

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It is interesting that in an age of Information Technology so many people should still find it attractive to produce tape/slide sequences. They are more fiddly to use than videocassettes and do not have the possibility of animation. Their only possible advantage seems to be their lower price and the fact that it is easy to freeze the frames although this is also a feature on videocassette recorders.

All these sequences come with the commentary also printed in book form. Two of the series offer a very small amount of help to the teacher in addition to the printed commentary but the general assumption seems to be that the teacher will know how to handle this material.

An Introduction to Computers was developed in Australia and has an Australian commentary although this is not obstructive. Each unit comes with 24 slides, a copy of the text including some helpful teachers' notes, and the sound cassette. The first unit covers the historical development and would probably be of use only for background information.

The second unit on the working of the computer contains some odd pictures and comments. A diagram of the parts of a computer, which is used twice in the sequence, shows the input fed into the control unit and the output coming from the arithmetic and logic unit.

It is equally unhelpful to claim that floppy discs are just another form of magnetic tape. The most extraordinary statement, however, is that the central processing unit makes sense of all the information passing through the computer.

In the Micro Processor in Modern

Key changes

Microwriter Ltd, producers of the "writing" device, the Microwriter, have now produced the Quinky. It looks like the Microwriter and words and instructions are keyed in in the same way; that is using different combinations of four keys to form letters and instructions.

The advantages, say Microwriter, and first those which are applied to Microwriters: children can learn to touch-type using the Quinky very fast. Quinky and second, the cost: the initial keyboard and interface (hardware and software) costs £49.95 and additional keyboards £28.75.

In addition to up to four Quinkies can be connected to a single computer. If the Quinky is used with the appropriate software, each Quinky can have its own section of memory and screen.

Microwriters are already used in some schools and have proved particularly useful with some handicapped children. Trials of the Quinky have been organized by the Microelectronics Education Programme in five Newcastle schools. The results, say

Life, one of the topics covered is the use of computers in education. It is unfortunate that the example given shows a screen picture with a question in capital letters asking for the population of Australia. It could give the impression that this strange tutorial mode is the only use. Many people involved in computer aided learning would also be horrified to hear that children involved in computer aided learning will work alone with very little contact with other children.

The sequence on Talking with Computers is about computer languages rather than speech synthesizers. It is claimed that the latest and most efficient language is PASCAL. No justification is given for this extraordinary statement. It is also claimed that, because all computers use the same electrical code it is possible to have machines on opposite sides of the world talking to each other. All that is required apparently is a telephone link.

Overall the series is very slight and the number of silly errors tend to invalidate it. There are also too many cartoons, simple diagrams, and pictures of pieces of paper and documents and books.

Microcomputers is a more professional sequence although there have to be reservations about a book that begins on page one with the eighth slide and fails to notice slides one to seven.

Uses and Applications confuses applications with the hardware and software needed to implement them. The original series seems to have been aimed at adults and children but is a bit bewildered by being told that, although they may never have used a computer, someone they know has or probably one of their children at school has!

There is usually far more text with each slide than in the other sequences and the level of language is rather high. It is doubtful, for example, that children will understand long lists of applications which include financial modelling, invoicing, and health and safety records.

Information Technology is sold very heavily on the grounds of competition. The more applications we can devise for the microcomputer and the more readily they are put into effect, the more likely the country is to retain its competitive edge, and hence avoid large scale unemployment. Although this may well be true, many teachers would perhaps like to see a more balanced argument put forward.

In Putting them to Work there is much talk of "workplace" and "work people". The same format is followed as before with a minor application

being used to introduce a great deal of technical talk. This series covers the internal workings of the computer central processing unit and some peripherals. As in the first series it is assumed that pupils and teachers will have a lot of background knowledge. Many teachers of Information Technology or Computer Studies will find difficulty explaining to their pupils the distinction between a budget ledger, a sales ledger and a stock ledger.

Although this series is technically more accurate than the Australian one, the level of language and the expectations about the common experience of the audience mean that it would only be useful for some like sixth form Economics class. Certainly could not be recommended for lower school application work or Information Technology course.

What is a Computer? is deliberately aimed at school students and tries to pay particular attention to the aspects of computers which school students are unlikely to meet in the schools. Students are introduced to digital computers from three points of view. Nine slides cover the historical perspective and are followed by further 13 which cover the technological perspective in terms of minicomputers and microcomputers.

A further six slides concentrate on how chips are designed and produced.

The second sequence, What is a Computer? falls roughly into two halves. The first section concentrates on what the computer hardware does. The second half illustrates the applications. The second half illustrates the applications. The second half illustrates the applications. The second half illustrates the applications.

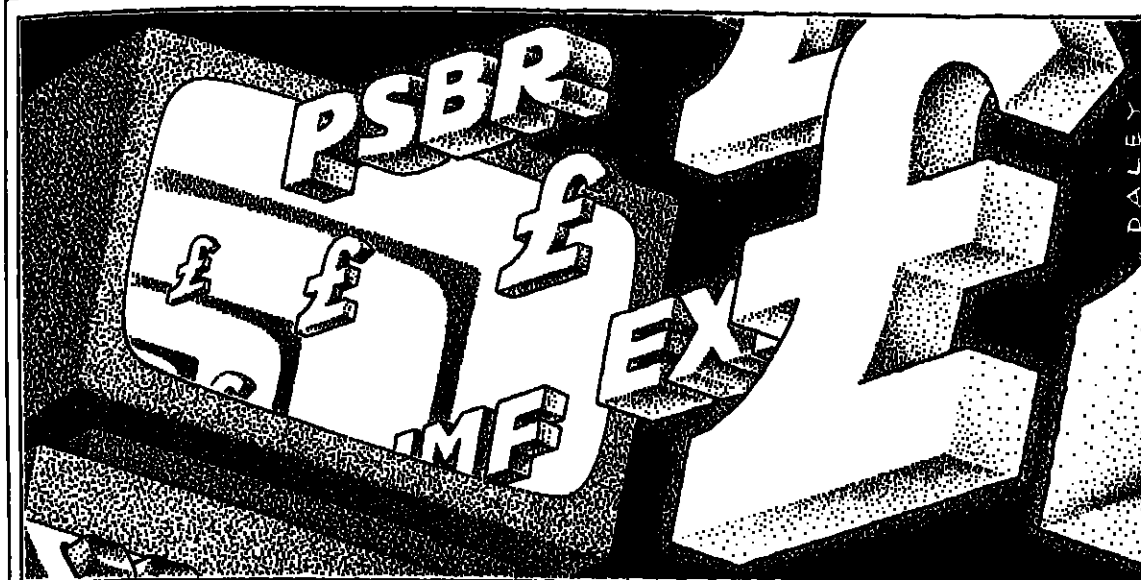
These two booklets are professionally produced and with a good summary again at a fairly high level. This material is more suitable in this form of presentation for adults than for children. Its use therefore would probably be restricted to adult forms or further education colleges.

All the materials are produced to a good technical standard with clear slides and easily audible cassettes. Most need to give much more serious consideration to the objectives which they think they are meeting and to the help and guidance the average, often inexperienced, teacher of Computer Applications courses, will need.



MEP suggest that all children can learn to use the keyboard easily and quickly at the end of the six week trial period all the children were using them. Teachers reported increased motivation and concentration and a doubling of the quantity of writing produced. Improved spelling and punctuation were also noted. A special package for schools called the Quinky Education Package has been made available by Microwriter. It consists of four Quinky keyboards, one interface pack and three software items: PROG- for programming, word processing and QUINKEY- for word processing package which gives four children to use the Quinkies screen. The package costs £149.95. The Quinky package will be available from the beginning of June from Vector Marketing, Denington Road, Welton, Northamptonshire NN8 2RL.

EXTRA



Questions of economics

by David Whitehead

Growth Under Fixed Exchange Rates.

By Steve Hurd.

Equi-Marginal Utility.

Price Discrimination.

Longman Micro Software

£14.50 each + VAT.

Available on RML 380Z disc, RML

380Z and 480Z cassette, BBC micro-

cassette and disc, Apple II disc, Com-

modore PET cassette and disc.

These two packs comprise over a quarter of the second generation software developed for economics teachers by the Computers in the Curriculum Project at Chelsea College. Both aim to supplement conventional teaching of concepts which A level students often find difficult. Each unit contains a leaflet which explains how to set up the programs for each type of micro; a 15 to 20 page booklet for the teacher; a few student worksheets; and the software. They are packaged in an expensively produced plastic folder. Whether teachers will want to spend £16.67 for an aid that will be used at most for a couple of lessons is doubtful.

The units employ much more sophisticated graphics than were possible with the first generation materials. The programs are interactive and flexible, and no previous knowledge of computing or programming is needed by either the teacher or the student. The authors state that the units have been tested with teachers and in schools to ensure that they are reliable, adaptable and valuable in the classroom. If so, it is hard to explain why so many errors and inaccuracies remain in the second two programs.

The uneven quality of this software is exemplified by *Growth Under Fixed Exchange Rates*, which is incomparably more valuable than the two other packs. Opponents of CAL would be wrong to condemn it on the basis of a few weak examples: this unit shows just how sophisticated it can be.

Steve Hurd's program is designed to complement the teaching of basic microeconomic theory under fixed exchange rates. The regime is that of the 1930s and 1960s, with a low rate of inflation and very low unemployment. The distancing of the simulation may help students to examine more clinically the workings of the model and its assumptions. The objective is to obtain a steady state of economic growth and equilibrium in the balance of payments, using foreign exchange reserves, interest rates and the budget as policy instruments.

A file of real data for the UK economy for the period 1956-68 is also included on the disc to facilitate comparisons between the results generated by the simple Keynesian model and the actual outcomes in the real economy.

The computer program is very flexible. It can be used to simulate a wide range of economic scenarios, and the results can be displayed in a variety of ways, including graphs and tables.

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charges more on Saturdays, in order to even out demand fluctuations. But a haircut on Saturday is not the same service as a haircut on say a Monday morning. Price discrimination would involve charging different customers different amounts for a haircut at the same time.

The leaflet has no question A5, though the answer to A5 is provided in the teacher's booklet. Worksheet B omits a key word in question B1 thus rendering it meaningless. B3 is a very peculiar question, not corresponding with the graph in B2. Worksheet C asks the students to decide what price to charge for a car in home and export markets, and the software package concentrates on this problem.

C9 omits a word, again obscuring the question, and talks about "elasticities" in the answer. Worksheet D provides further theoretical analysis. Leaflet E is confusing because, while there are questions E1 and E2, and figures E1 and E2, question E2 refers to figure E1. E3 asks students to think of a market where perfect price discrimination is found, and gives private medicine (wrongly) as an answer. The references and further reading cite an unknown Australian text, the 1976 edition of Stanlake's *Introductory Economics* (out of print), and Lipsey's 1980 edition, with the publisher's name unsurprisingly missing. I believe these units are produced in York somewhere near The Shambles. How apt!

David Whitehead, is senior lecturer in Education at the London University of Education.

Number play

by Andrew Rothery

Get Set

Available on cassette for the Sinclair Spectrum and BBC Micro Model B

Price £5.17 excluding VAT and postage

Education at Leisure, Griffin Software, Ealing Road, Alperton, Wembley, Middlesex.

Number Skills 0-20, Number Skills 0-999

Available on cassette for the BBC Micro Model B

Price £9.95 including VAT

Longman, Longman House, Burnt Mill, Harlow, Essex.

presentation. Again, they give computation practice. The 0-999 program, for example, deals with addition and subtraction of large numbers. It is quite thorough in explaining what to do if you give the wrong answer. A hundreds, tens and units chart appears on the screen, showing place value apparatus in diagrammatic form. The calculation is carried out in stages and the apparatus moves about to illustrate each stage. A 10 will change into 10 units and so on. Textbooks always seem to find these diagrams hard to present and the program manages this job quite well.

Experience of book sales would indicate that other kinds of program would be less successful in this dual role. However, programs are not books. Many of the popular recreational programs have no obvious parallels in the book world. School computer programs do frequently use techniques of presentation (such as simulation) found in recreational programs. So there is scope for the development of school programs used also at home, which might deal with skills other than computation, too.

This idea certainly makes sense in terms of economics. But can the same program really be as effective in the home environment as it is in school? As far as mathematics textbooks are concerned, the home and school markets are fairly separate. Though one or two primary school textbooks can be found in bookshops, the majority of titles on the shelf are specially produced to attract parents. To some extent this is necessary since parents usually wish to buy self-contained books, rather than ones which are part of a long series. Judging by the titles, parents also seem to want to buy books on basic number skills and are less concerned about other areas of mathematics.

The computer programs listed above are self-contained and consist entirely of drill-and-practice number work. So they do indeed seem to be the sort of thing which will appeal to parents and be of some value to teachers, too.

Get Set helps infants with addition and subtraction. The screen displays pictures of objects and invites the child to add or subtract objects. Only numbers up to 20 are used, and answers are meant to be found by direct counting. The material is very much like that found in textbooks, though animated and made interactive by the use of a computer.

The Number Skills programs are much plainer in their methods of

presentation. Again, they give computation practice. The 0-999 program, for example, deals with addition and subtraction of large numbers. It is quite thorough in explaining what to do if you give the wrong answer. A hundreds, tens and units chart appears on the screen, showing place value apparatus in diagrammatic form. The calculation is carried out in stages and the apparatus moves about to illustrate each stage. A 10 will change into 10 units and so on. Textbooks always seem to find these diagrams hard to present and the program manages this job quite well.

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Cambridge Educational

Cambridge Educational

Cambridge Micro Software

With imaginative programs across the curriculum

Primary School	Secondary School
★ Factfile Daniel Chandler ★ Picfile Anita Straker ★ Tessellations Homerton College	★ Balance Your Diet ★ Population Growth ★ Moving Molecules ★ Watts In Your Home

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Homerton College:

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- ★ **Lift**
- ★ **Floater**

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Netherhall Software:

- ★ **Maths Topics 1**
- ★ **Maths Topics 2**

PHYSICAL SCIENCE
Netherhall Software:

- ★ **Introducing Map Skills 1**
- ★ **Introducing Map Skills 2**
- ★ **Sea Cliff Erosion**

HISTORY
Netherhall Software:

- ★ **1914**

MODERN LANGUAGES
Netherhall Software:

- ★ **French Connections**

SCIENCE
Netherhall Software:

- ★ **Making Ends Meet**

BBC(B) Disc versions available in all programs
BBC(B) Cassette versions available in all Netherhall Software programs and for the primary school
RML 380Z Disc versions in preparation for all programs

NS Netherhall Software

All programs subsidised by MEP

Homerton College

For further information on any of the programs, a direct order form or to ask for programs on approval write to Rosalind Horton at the address below.

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, England

Watts In Your Home
Balance Your Diet
Moving Molecules
Available on cassette or disc for the BBC Micro B Price £15.57 each
Teachers' handbooks, 16p
All from Cambridge Micro Software, Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU.

These three computer programs were published in 1983 and by now seem to have found their way into a number of science and home economics courses. All three are well-packaged, clearly written, and accompanied by helpful handbooks for the teacher with worksheets to reproduce. Suggestions for further work, and ideas for classroom management, are included for each program.

There are three aspects to consider in judging any program for science education: first, the educational value and science content of the program itself; second, how well the program fits into existing and future science curricula; and third, how can a teacher organize a classroom or science laboratory with perhaps one or two microcomputers to fit the program into his or her practical lessons. The Cambridge programs score highly on all three criteria.

Watts In Your Home allows students to calculate the cost and energy consumption in megajoules (MJ) of various devices used at home. These devices range from gas fires and wood-burning stoves to videos and micro-

computers. Using the data given for different fuels, students can work out the amount and cost of a day's domestic energy. The power ratings used in the program are shown on page 21 of the handbook so that a conscientious teacher, and hopefully pupil, can check the figures the program is based on.

This checking process should be an essential part of any student's use of a database or simulation program. Any student, especially in science, must be taught to examine and question the facts, assumptions and models underlying them. The data used in these Cambridge programs can be examined, which is a major point in their favour. Unfortunately a few questionable figures are given, eg a micro-computer's power rating is given as 500 watts although "50 watts" is clearly written on the back of the BBC micro. But teachers could discuss such discrepancies with a good class.

The costs of each fuel are displayed in a table, and can be edited to keep up with current prices. This table shows the cost of fuels per kg, per litre, per therm and so on, although megajoules are rightly used as the unit of energy elsewhere in the program. A

Watts and molecules

by Jerry Wellington

useful addition would be a table showing the cost per megajoule of each fuel. This would show clearly the relative cost of various domestic energy sources.

This program will slot fairly easily into existing science curricula for pupils in the third to sixth years of secondary schools. It will need to be followed by work on energy conservation, and ideas are given in the teacher's handbook. Perhaps a follow-up program will be written to show how energy consumption can be reduced.

Balance Your Diet is also enjoyable to use. With this program you can analyse your daily diet, and make sure you're having enough of the right things.

The program dissects your diet in terms of energy intake, protein, fat, fibre, carbohydrates, vitamins and minerals. This is then compared, using clear graphs and appropriate colour, with a recommended diet. All the data, and their sources, are shown in the teacher's handbook.

An interesting feature of the program is the ability to compare a North American city dweller (male, presumably Caucasian, age 30) with a farm-worker in India. This comparison raises some extremely interesting questions, as well as transmitting some hidden messages. The Indian's diet is obviously deficient in many respects, especially energy. The North American's diet is about par for the course, except that his energy intake is 12.4 instead of 12 megajoules. Does this mean that he is gaining weight? Will he take up jogging or aerobics?

The obvious complement to **Balance Your Diet** is a program on energy conversion in human beings. How many kilojoules of energy are converted by a minute of walking? Why do different people have different energy requirements? By producing an energy conservation program to complement **Watts In Your Home**, and an energy conversion program, with **Balance Your Diet**, pupils could be shown the two sides of the energy equation. Perhaps Cambridge will restore equilibrium in their next batch of software.

The third program of the trio, **Moving Molecules**, is probably the most attractive but certainly the most dangerous educationally. It introduces simple kinetic theory and shows how variations in pressure, temperature

and volume affect molecular behaviour in solids, liquids and gases. The first part shows change of state as temperature is raised from absolute zero up to a maximum of 800K. The second part shows diffusion.

During this part a message appears on the screen: "Air molecules, which are too small to be seen, are colliding with the gas molecules". In my view, this statement should be edited as soon as possible. It suggests to pupils that "gas" molecules are larger than air molecules, and worse still that they can be seen. I did not realize this until I overheard two pupils who had seen the screen. One remarked to the other while drinking a glass of lemonade: "Look, I can see gas molecules".

The third part of the program shows the variation of pressure with temperature, at constant volume. The number of molecules can be varied from one unit to 28, which is fun, but again misleading. Teachers will have to intervene and explain here. The final part shows how volume is affected by pressure with temperature constant. Again, this is fun to do but dangerously misleading. Pupils will believe that when a gas is compressed its temperature stays constant. Teachers will need to point out the difference between isothermal and adiabatic changes at this point - good luck to them!

Most of the problems of this program stem from the fact that it is a model of a model, two steps away from reality. This doubles the danger of students using it to make assumptions. This effect is doubly dangerous in that the model is an idealization of reality, and the program is doubly so.

In the future, science teachers will be increasingly tempted to use simulations in their lessons for reasons of time, cost, safety, ease of manipulation and easier classroom control. If they do, they must be aware of the essential dangers in simulations:

- Every simulation involves manipulating certain factors within a model of reality. Any model ignores certain features in order to concentrate on others, so it is an idealization.
- In reality, not all variables can be controlled as simulations suggest.
- All simulations are based on some assumptions. This effect is doubly dangerous in that the model is an idealization of reality, and the program is doubly so.
- All simulations (and databases) are on certain facts. Where do those "facts" come from? What sources have been used?

If a science teacher uses the Cambridge programs with extreme care, and attention to the four points above, they will be a valuable asset to science education. All these programs are clear displays, helpful means and unambiguous instructions. They are excellent use of colour, without being extravagant. Useful classroom hints and strategies for classroom use are supplied in each case. The worksheets are clear and well-written, and sources of data well referenced.

From "Watts in your Home".

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Chemical Structures and Chemical Analysis
For BBC Micro Model B
Cassette: £12
Disc: £15
Acornsoft Ltd, 4a Market Hill, Cambridge, CB2 3NJ.

Chemical Structures and Chemical Analysis are supplied in the standard Acornsoft format of an A5 cassette-holder and booklet. The teachers' guides, present a description and a sample run of each program. An A4 (or picture) of reality. Any model ignores certain features in order to concentrate on others, so it is an idealization.

Chemical Structures contains two programs - **Bonding and Shape**. **Bonding** uses simplified "bullet-eye" diagrams to illustrate the type of bonding (ionic or covalent) which occurs between two user-selected elements. The first 18 elements are displayed in a periodic table format and the user is asked to select two elements. The display makes good use of colour and these produce contrasts which are easily visible in monochrome, however, the instructions refer to "RED" and "GREEN" elements.

The elements are selected by typing in the appropriate symbols and, here, I found the program less than helpful. The symbols must be typed correctly: in upper-case followed by lower-case for two letter symbols. If the wrong case is used, the program simply returns to the input stage with no comment on why the input was not accepted - indeed, it does not even say that the input was not accepted. I would have much preferred a program which accepted input irrespective of case, but which displayed the correct form on the screen.

Once two elements have been chosen, the program will display the type of bonding involved. Each atom is shown by its symbol, surrounded by a ring representing the outer "shell" of electrons; the electrons being shown as coloured dots. When the atoms overlap, with the bonding electrons in the overlap region. This illustrates well the concept of electron sharing.

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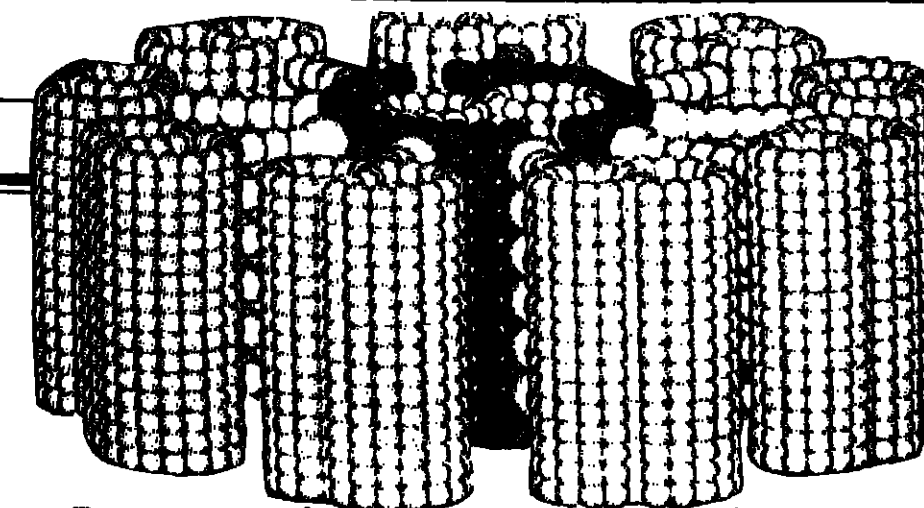
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chemical reactions

by J L Chatterton

although the phrase itself is not used - the display is simply headed "covalent".

"Bull's-eye" diagrams are again used where an ionic substance is formed. However, the individual atoms are drawn first with the two outer shells of electrons being shown on the more electron-positive atom. The outer electrons are then transferred, one by one, to the appropriate atom and the remaining "empty shell" is removed.

While the program could form the basis for some useful work, there are several problems, both conceptual and factual, which the teacher needs to consider. How can the chemically-naïve user relate the display to the electronic structure of the atoms?

Neither the program nor the students' notes refer to the "inner shells" and, although ignoring the "inner" electrons undoubtedly produces much simpler diagrams, it requires the student to have a much greater awareness of electronic structure than is likely to be the case with students just beginning to consider bonding as a topic.

Indeed, it could be argued that the program implies that ionic bonding occurs when one of the atoms has two "shells" of electrons. A somewhat related problem occurs when the user selects Helium, Neon or Argon as one of the elements: there is no display of electronic structure; the user is simply told "silly NOBLE GASES do NOT react!"

For someone learning about chemistry this request for information is far from silly and they deserve some explanation about why they do not react.

In common with most teaching of bonding at this level, the program presents the spectrum of bonding situations as a simple dichotomy: compounds are either ionic or covalent.

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for predicting bonding type, the unwary are invariably led into a number of pitfalls which this program also fails to avoid. BeH₂, AlH₃ and Na₂N are all given as ionic compounds and the display for SO₂ shows the planar trigonal molecule with double bonds to both oxygens, resulting in ten electrons in the "outer shell" of the sulphur atom.

Overall, I feel the program could be useful as an aid to revision or consolidation of the topic (with teacher supervision) but that it is not suitable for initial teaching nor for individual work.

Shape allows the user to select a pair of elements in much the same way as in **Bonding**. The program, however, is only effective with those combinations giving simple covalent molecules and all the ionic compounds (and many covalent ones) produce the same response: "Sorry! That one is too complicated. I can only show simple covalent molecules." Indeed, if one worked systematically through the elements available, it could be some time before one found an acceptable combination.

However, once an acceptable combination has been found, the program then draws a fairly conventional 3D representation of the chosen compound and, on pressing the space-bar, displays two further views after rotation about an axis.

Even with practice, some of the diagrams remain ambiguous, especially those based on a tetrahedron. This confusion is made worse when the diagram is rotated as neither the axis nor the angle of rotation is indicated and the changes shown are extremely difficult to interpret. Further confusion arises because all the bonded atoms are joined by a single red line, for example carbon dioxide is shown as O-C-O.

While this may be intended to show

the directed nature of the bond (or, in this case, an axis of symmetry), the great majority of first-time users will take it to represent a single bond joining the atoms. Red lines are also used to represent the positions of lone-pairs of electrons within the molecule and the overall shape is outlined in white; unfortunately, the lone pair is only indicated after the outline has been drawn. Each diagram is supported by a small amount of text giving a description of the shape and, where appropriate, the numbers of lone pairs and bonding pairs and the bond angle. While most of the diagrams are quite accurate, there are two significant errors: SO₂, once again, has ten electrons around the sulphur ("I lone pair and 4 bond pairs") and SiO₂ is shown as a linear triatomic molecule - the same structure as CO₂.

Chemical Analysis contains three programs, **Elements**, **Inorganic** and **Organic**. The three programs are similar in outline: each chooses an unknown substance which the user has to identify by a number of "tests". **Elements** and **Inorganic** are intended for the 14 to 16 age group while **Organic** is intended for the 16 to 18 age group. The programs are based on a number of pages of text, each representing a particular stage in the investigation, and colour is used to highlight portions of the text - particularly the key words for the operation of the program. While the layout is fairly clear, there is a lot of text on the screen and the overall impression is slightly untidy. After instructions on how to use the programs, the user is presented with a series of tests which are chosen by number.

In **Elements** and **Inorganic** a clue to the identity of the substance is also shown. A separate screen shows the results of the tests and, as the program proceeds, this page displays the results

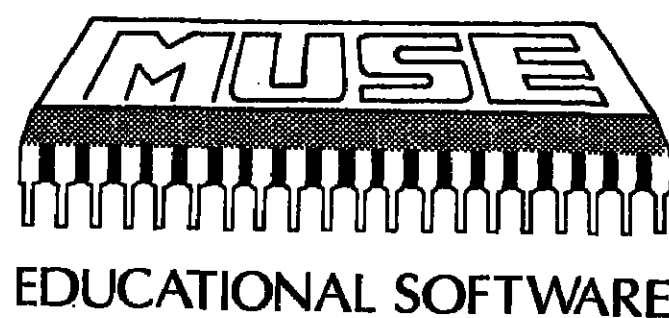
of all the selected tests. On returning to the test page, the tests used are shown in green.

A separate page allows the user to "guess" the identity of the unknown substance. In **Elements** and **Inorganic** the user is asked to give the name of the substance and, if this is correct, to give its symbol or formula. The routine is slightly different in **Organic**, where one is first asked to identify the class of compound (alcohol, aldehyde etc) and then to calculate the formula of a particular member of that group from a percentage composition given by the computer. After guessing the identity of the substance, pressing the space-bar displays a "score card" showing the number of tests used, guesses taken etc. Pressing the space-bar again returns the program to the "test" page with a new substance selected.

Pressing the Escape key produces an **Escape Menu** from which the user can finish, re-run the program or continue after being told the identity of the unknown substance. This provides a route through the program when the identity of the substance cannot be deduced. However, the version of **Elements** reviewed consistently refused to give the identity of the unknown element.

Elements and **Inorganic** each offer three levels of difficulty, with the number of unknown substances increasing in stages. The division is, necessarily, somewhat arbitrary - is sodium really "easier" than potassium, or lithium "harder" to identify than plutonium? Indeed, the substances included and the clues given should be carefully re-examined: for example, the tests available would not allow the average 15 year-old to distinguish between radium, uranium and plutonium and one might ask why these elements are included at all. The deliberately ambiguous nature of the clues can be too misleading: some elements are labelled as "poisonous", but this label is not applied (for example) to plutonium - the most poisonous of all! A further ambiguity arises in **Inorganic**: in the introduction the user is told (repeatedly) that the substance is a compound, yet many elements are included in the "unknown substances" actually presented by the program.

The overall impression given by **Chemical Analysis** is that it could be a useful stimulus to revision - more so if some of the less common substances were omitted - but that it would find less use as an aid to initial teaching. **Chemical Structures** seems rather less useful, although **Bonding** could also be used at the revision stage if the errors in the chemistry were corrected.



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Computer Software for Study Teachers

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Eating patterns

by E Kay

Microdiet. Available on disc for the RML 3802 with 56K memory (RAM) or 32K and high resolution graphics board (HRO), can be used with either printer or monitor. Price £25.00 + VAT. Longman Micro Software, 33-35 Tanner Row, York YO1 1JP.

Is there a nutritional difference between sterilized and fresh milk? Would you get most fibre from brown bread, wholemeal bread, Allbran, cabbage, rice or apples? Which meat is the best source of iron?

Microdiet is a computer software package which enables pupils to answer these questions - and more besides. While not claiming to provide a scheme for teaching nutrition, it aims to make a contribution to nutrient education by developing a problem-solving approach and stimulating pupils' curiosity in their own eating patterns.

The **Microdiet** program provides a nutritional analysis of foods, an indication of individual daily requirements, and the opportunity to test foods and nutrients on the basis of purchase price. The program offers a choice of four tables, using a database with over 500 foods and details of up to 29 nutrients for each. Food codes are found in the students' handbook and the listed foods are subdivided alphabetically into food groups and numbered in order of increasing energy value.

The fourth table enables the user to select one of the 29 listed nutrients to be analysed in any number of foods. It therefore offers the possibility of com-

paring the amounts of chosen nutrients in specific foods. It is possible using the same set of food entries to move from table to table. However, if the cost table is used, it should be chosen first as the cost values etc to be entered. The instructions that absolutely no computer knowledge is needed by teacher or pupil to use the program. Instructions for preparing and loading the data are given in the teacher's guide. The master-disc (very sensible) but, since it had the program for review and wasn't supposed to make a copy, I tried to avoid doing so and ran into difficulties. In addition, the instructions for making the back-up copy assume we have a dual disc drive, and we don't!

The program can be run on STRO-DENT mode, which provides a large display throughout. All commands are prompted and the user has control over the command sequence. Alternatively the **COMMAND** mode can be used. This is quicker and gives it possible to eliminate some of the questions asked in the student mode which are not relevant to the table being used.

The program itself does not accommodate changes in the user's list of pupils but the amount of data entered may be varied and the results obtained used in different ways. The sufficient theoretical background to the program is most appropriate for use with 13-year-olds upwards.

Continued on page 58

Eating patterns

continued from previous page

Microdiet is an aid, not a substitute for traditional teaching methods of nutrition education. For the program to be effective, adequate preparation is required by both teachers and pupils. Time must be spent in collecting input data - to assist in this Input Preparation Sheets (copyright free) are included in the

EXTRA



In the workplace

Paul McGee on 'The Computer Applications Project'

Children need for examination courses. The exercises allow for a small amount of individual use of the computer by the pupil. There are three copyright-free masters for pupil worksheets covering this practical work and the use of a flowchart to describe an algorithm for booking a flight. Although the current software is useful for class demonstration, this application obviously needs the use of a network rather than use as simulation on a stand-alone machine.

One difficulty in teaching the applications of computers is that students lack both the background knowledge and the terminology for many commercial uses. *Personal Banking* covers many of the basic ideas and terms in a straightforward way. It gives a useful picture of how the Trustee Savings Bank developed its style of working and highlights the need for computers in modern banking.

This program is particularly suitable for individual or small group work, though it can also be used for demonstrations to the whole class. The two worksheets give pupils plenty of opportunity for written and hands-on work. The programs relate to an individual teller and are therefore suited for stand-alone use. Usefully data is "remembered" between sessions.

The *Supermarket Stock Control* booklet is the least successful. Too many of the diagrams, are on different pages from the related text. It would

be valuable for students to compare the facilities it offers with those used by general purpose database packages used by the school or college.

The *Computer Applications Project* is a useful resource for teaching commercial data processing. Teachers' Guide contains a wealth of helpful suggestions for the teacher both in using the booklets and in follow-up activities. Some experienced Computer Studies teachers may find the tone too prescriptive, but the majority will welcome such guidance.

The best part of the pupil booklets are the exercises and questions. The programs are variable in quality, seem to have been designed on the assumption of one machine for every pupil. They therefore fail to take advantage of the rapidly growing number of computers in schools and in growing availability of networks.

It is not clear whether this is due to backward looking attitudes or to the small size of the computer. The material is made more difficult to use by several comprehensive diagrams and a form which can be read only with a magnifying glass. There is however a good systems flowchart and a very good diagram showing the structure of an hierarchical file.

The census program on the other hand is easy to use and involves worthwhile student activity. It would

to ten year olds; Word Workbooks; spelling exercises; and Snap-It, matching and sorting game for four to eight year olds. The programs are designed for the Commodore 64 and ZX Spectrum.

Further details from Longman Group Ltd, Longman House, Burnt Mill Lane, Harlow, Essex CM20 2JE.

Early learning

Longman Software have produced four more early learning games designed to help young children acquire basic skills. The new programs are 3D Hypermaths, described as "space odyssey maths for eight year olds upwards"; BMX Number Jump, for six

to ten year olds; Word Workbooks; spelling exercises; and Snap-It, matching and sorting game for four to eight year olds. The programs are designed for the Commodore 64 and ZX Spectrum.

Further details from Longman Group Ltd, Longman House, Burnt Mill Lane, Harlow, Essex CM20 2JE.

The Computer Applications Project Paul Murphy and Kathleen Hennessey Programs on disc for RML, Commodore, PET or Apple Addition Wesley Teaching Pack £70.00 Packs of five individual pupil books £15.95

The Computer Applications Project was developed from research into the facilities needed to teach commercial data processing-oriented topics in Computer Studies. The material is designed for CSE, O level, BTEC or appreciation courses in upper secondary schools and Further Education colleges.

The Teaching Pack contains a student book for each application, the demonstration program on disc, and a teacher's guide. Pupil books are available separately in packs of five.

The applications covered are: *Airline Reservations* based on the British Airways system; *Trustee Savings Bank* based on the Trustee Savings Bank; *Supermarket Stock Control* based on the Tesco system.

The Teacher's Guide provides a helpful checklist of the detailed syllabus areas covered by each application.

Each application has a sixteen or twenty page pupil book devoted largely to an explanation of the real system. There is also a glossary of terms, practical and theoretical exercises for the student, and relevant examination questions in each book. The level of reading in the main text would defeat many weak CSE candidates even though new terms are highlighted and the glossaries are almost complete.

The explanations for the *Airline Reservations* system are clear, and the demonstration program is simple to use. The screen displays are well thought out for class demonstrations. It is a pity though that there is such a small number of flights to be booked and that the amount of data stored is also so limited. A flight with only eight seats remaining apparently has no passengers before the students book some! The data entered by the student was lost after the machine was switched off, which will contradict the basic ideas of backing storage which chil-

dren need for examination courses. The exercises allow for a small amount of individual use of the computer by the pupil. There are three copyright-free masters for pupil worksheets covering this practical work and the use of a flowchart to describe an algorithm for booking a flight. Although the current software is useful for class demonstration, this application obviously needs the use of a network rather than use as simulation on a stand-alone machine.

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WORCESTER**
COUNCIL
WASELEY HILLS HIGH
SCHOOL
School Road, Rubery,
Birmingham B45
92L
Required from September
1984. Head of Mathematics
Scale 3. Applications are
invited for a newly qualified
teacher or a person seeking
one term appointment in the
above post not being
filled until January.
Letters of application to
Headmaster as soon as possible.
(025775) 133418

CYNGOR SIR
DURFED
COUNTY COUNCIL

YN EISIAU ERYNN 1af MEDI, 1984

1. PHRATHAWONPHATHAWESAU at gylar yr ysgolion canlynol:
- a) YSGOL GYNNAD CWRN HENRI (Grwp 2)
- b) YSGOL GYNNAD CWRN HENRI (Grwp 2)
- c) YSGOL GYNNAD HAFODWENOS, TRELECH (Grwp 2)
- d) YSGOL GYNNAD LANISTAFAN (Grwp 4)
- e) YSGOL Y BARDOD, FELINFOEL, LLANGLI (Grwp 3)

Rhaid i'r ymgebwyr fod yn ddysgu am o lefel bun mynysid mewn ysgolion
cymuned, rhifid with ysgolion o'r ymgebwyr.
Adrodd am fuddsoddi ymgebwyr yn ddiwydiannau amlwg a'r
stamp at y Cyfarwyddwr Addysg, Adran Addysg, Gwynedd,
SAE 22HL. Cofredudd i'r ymgebwyr eiddad ym 27ed Medi, 1984.

Required for 1st September, 1984

2. Applications are invited from suitably qualified teachers for the post of
DEPUTY HEADTEACHER at the undermentioned schools:-
- a) RICHYD STREET V.C.P. SCHOOL, CARMARTHEN (Grwp 3)
- b) MORFA JUNIOR C.P. SCHOOL, LLANGYNNOR (Grwp 4)
- c) GOLDEN MAJOR C.P. INFANTS SCHOOL, GOLDEN LANE, PEMBROKE
(Grwp 4)

The School has a Welsh unit.
A knowledge of Welsh is desirable for the above posts.
Application forms and further details are available on receipt of a stamped
envelope from the appropriate Area Education Officer:-
Post a) Area Education Officer, Carmarthen SA31 10J.
Post b) Area Education Officer, Llanelli SA16 20A.
Post c) Area Education Officer, Haverfordwest SA61 10Z.

Completed applications to be returned by 7th June, 1984.

3. WHITLAND GRAMMAR SCHOOL, WHITLAND SA34 0BD (Grwp 3)
- Teacher of COMPUTER STUDIES, WHITLAND SA34 0BD (Grwp 3)

Application forms and further details available on receipt of a stamped
envelope from the Headmaster to whom completed applications
should be returned by 7th June, 1984.

4. ST. JOHN LLOYD, 11-16 R.C. COMPREHENSIVE SCHOOL, LLANELLI SA14
4DH (Grwp 7)

Reference ET 43984/7ES
Bradford is an equal opportunity
employer and welcomes
applications from people of
any race, sex, age or disability, unless
otherwise stated. (02825) 132418

YN EISIAU ERYNN 1af MEDI, 1984

- a) YSGOL GYFYN Y STRADE, HEOL SANOY, LLANELLI SA16 4DH (Grwp 3)
- b) YSGOL GYFYN Y STRADE, HEOL SANOY, LLANELLI SA16 4DH (Grwp 3)

Rhaid i'r ymgebwyr fod yn ddysgu am o lefel bun mynysid mewn ysgolion
cymuned, rhifid with ysgolion o'r ymgebwyr.
Adrodd am fuddsoddi ymgebwyr yn ddiwydiannau amlwg a'r
stamp at y Cyfarwyddwr Addysg, Adran Addysg, Gwynedd,
SAE 22HL. Cofredudd i'r ymgebwyr eiddad ym 27ed Medi, 1984.

Required for 1st September, 1984

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(Grwp 4)

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Completed applications to be returned by 7th June, 1984.

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Scale 2 Posts and above

BARNET
LONDON BOROUGH
METROPOLITAN COUNCIL
Chesham Grove, Cat Hill,
Barnet, London N20 8JL
Tel: 01-440 4160
Required for September 1984
Scale 2 teacher to take
charge of the Mathematics
and Business Studies Faculty.
Candidates should be experienced
Mathematics teachers with
proven ability who can inspire,
co-ordinate and integrate the
work of a team of teachers.
The Head of Faculty must
be a teacher of vision, who
will be responsible for the
organisation and management
of the Mathematics and Business
Studies curriculum within
the school.
The successful candidate is
expected to be a dedicated
and enthusiastic teacher who
is committed to the whole
ability range, and prepared
to fully participate in the
school's guidance and
homework programmes. This
school is committed to a multi-
cultural approach to the
curriculum and educational
opportunities for all pupils.
Further details (and a
teaching sample) from the
Headmaster, Wyke Manor Upper
School, Wyke, Bradford, BD15
8TX, can be obtained on request.
Forms should be returned by
1 June 1984.
Reference ET 43984/7ES
Bradford is an equal opportunity
employer and welcomes
applications from people of
any race, sex, age or disability, unless
otherwise stated. (02825) 132418

BEXLEY
LONDON BOROUGH

HURSTMEAD SCHOOL
Hurst Road, Bexley, Kent
DA15 8AA
Tel: 01-300 5665

MATHS POST SCALE 3

Mathematics specialist
required for September to
teach at all levels in this
boys secondary school.
Studies are taken to 'A'
level and there is opportunity
to use computers to assist
in the teaching of
mathematics.

Although a scale 3 is
available to an experienced
applicant the post would
suit a newly qualified
teacher or a person seeking
one term appointment in the
above post not being
filled until January.

Letters of application to
Headmaster as soon as possible.
(025775) 133418

Applications by letter
please to the Headmaster
as soon as possible.
(15001)

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BUCKINGHAMSHIRE
MILTON KEYNES AREA

STANTONBURY CAMPUS
Stantonbury Campus is a multi-
functional Education and
Community Complex within
the Stantonbury Campus of
Milton Keynes. It is a
comprehensive school for
boys aged 11 to 18. The
campus is divided into three
main areas: Stantonbury
Hall and Bridgegate
Hall. Stantonbury Hall is
a large hall which is used
for a variety of purposes
including sports, drama,
music, and general assembly.
Bridgegate Hall is a smaller
hall which is used for
drama, music, and general
assembly. The campus is
well equipped with modern
facilities and is a very
pleasant place to work and
study. The Head of Faculty
must be a teacher of vision,
who will be responsible for
the organisation and
management of the
Mathematics and Business
Studies curriculum within
the school. The successful
candidate is expected to be
a dedicated and enthusiastic
teacher who is committed
to the whole ability range,
and prepared to fully
participate in the school's
guidance and homework
programmes. This school is
committed to a multi-cultural
approach to the curriculum
and educational opportunities
for all pupils. Further
details (and a teaching
sample) from the Headmaster,
Stantonbury Campus, Milton
Keynes, MK9 1JL, can be
obtained on request. Forms
should be returned by 1 June
1984.
Reference ET 43984/7ES
Bradford is an equal opportunity
employer and welcomes
applications from people of
any race, sex, age or disability,
unless otherwise stated. (02825) 132418

BEXLEY
LONDON BOROUGH

HURSTMEAD SCHOOL
Hurst Road, Bexley, Kent
DA15 8AA
Tel: 01-300 5665

MATHS POST SCALE 3

Mathematics specialist
required for September to
teach at all levels in this
boys secondary school.
Studies are taken to 'A'
level and there is opportunity
to use computers to assist
in the teaching of
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MERTON
LONDON BOROUGH OF

**EASTFIELD HIGH
SCHOOL**
Acacia Road, Mitcham,
Surrey CR4 1SF
Tel: 01-648 6627
Required for September 1984
Scale 2 teacher to take
charge of the Mathematics
and Business Studies Faculty.
Candidates should be experienced
Mathematics teachers with
proven ability who can inspire,
co-ordinate and integrate the
work of a team of teachers.
The Head of Faculty must
be a teacher of vision, who
will be responsible for the
organisation and management
of the Mathematics and Business
Studies curriculum within
the school. The successful
candidate is expected to be
a dedicated and enthusiastic
teacher who is committed
to the whole ability range,
and prepared to fully
participate in the school's
guidance and homework
programmes. This school is
committed to a multi-cultural
approach to the curriculum
and educational opportunities
for all pupils. Further
details (and a teaching
sample) from the Headmaster,
Eastfield High School, Mitcham,
Surrey, CR4 1SF, can be
obtained on request. Forms
should be returned by 1 June
1984.
Reference ET 43984/7ES
Bradford is an equal opportunity
employer and welcomes
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BEXLEY
LONDON BOROUGH

HURSTMEAD SCHOOL
Hurst Road, Bexley, Kent
DA15 8AA
Tel: 01-300 5665

MATHS POST SCALE 3

Mathematics specialist
required for September to
teach at all levels in this
boys secondary school.
Studies are taken to 'A'
level and there is opportunity
to use computers to assist
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Applications by letter
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(15001)



Gwent County Council

Required for 1st September 1984
ABERSYCHAN COMPREHENSIVE SCHOOL
(11-16)
Graduate to teach Art and Design throughout the age and ability range. Successful candidate to provide expertise in ceramics or photography and willing to develop skills and graphics related to technological processes.

KING HENRY VIII COMPREHENSIVE SCHOOL, ABERGAVENNY (11-16)
Required for 1st September, or as soon as possible, thereafter:-

- SECOND DEPUTY HEADTEACHER, Group 13
Application forms in respect of this vacancy to be returned to the Director of Education.
- MATHEMATICS
Graduate to teach throughout the age and ability range. Including sixth forms. Opportunities in Computer Studies.

LLANTARNAM COMPREHENSIVE SCHOOL, CWMABRAN (11-18)
(a) PHYSICAL EDUCATION
To teach girls throughout the school. Applicants from a recognised PE College at advanced stage preferred. Interest in Netball an advantage.

(b) FRENCH
Graduate to teach years 1 to 5. Commitment to the French Exchange and other activities essential.

ST. ALBANS R.C. COMPREHENSIVE SCHOOL, PONTPOOL (11-18)
(a) SCIENCE
To teach Physics, Chemistry and General Science. Some examination work may be available for a suitable candidate.

(b) MATHEMATICS/COMPUTER STUDIES
To share in the teaching of the subject up to CSE and O Level.

Further details and application forms from the Headmaster and should be returned to the Rev. J.H.V. Evans, St. Peter's Priory, Fairhill, Fairwater, Cwmbran, Gwent.

ST. JOSEPH'S R.C. COMPREHENSIVE SCHOOL, NEWPORT (11-18)
COMMERCIAL SUBJECTS, TYPING, SHORTHAND, ETC.
Application forms and further details available from the Headmaster to be returned to Father P. Bedy, Clerk to the Governors, St. Mary's Priory, Stow Hill, Newport, Gwent.

TRIDEGAR COMPREHENSIVE SCHOOL, (11-18)
PHYSICAL EDUCATION
To teach boys throughout the school. Applicants from a recognised PE College at advanced stage preferred. Facilities include joint use of Leisure Centre.

WEST MON COMPREHENSIVE SCHOOL, PONTPOOL (11-16)
MATHEMATICS/COMPUTER APPLICATIONS
To teach through the school O Level.

ST. MARY'S R.C. JUNIOR & INFANTS SCHOOL, CHEPSTOW
Experienced teacher for top juniors who has or is studying for the Catholic Teachers Certificate.

Application forms available from and should be returned to Father P. Bedy, Clerk to the Governors, St. Mary's Priory, Stow Hill, Newport, Gwent.

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To teach boys throughout the school. Applicants from a recognised PE College at advanced stage preferred. Facilities include joint use of Leisure Centre.

WEST MON COMPREHENSIVE SCHOOL, PONTPOOL (11-16)
MATHEMATICS/COMPUTER APPLICATIONS
To teach through the school O Level.

ST. MARY'S R.C. JUNIOR & INFANTS SCHOOL, CHEPSTOW
Experienced teacher for top juniors who has or is studying for the Catholic Teachers Certificate.

Application forms available from and should be returned to Father P. Bedy, Clerk to the Governors, St. Mary's Priory, Stow Hill, Newport, Gwent.

TRIDEGAR COMPREHENSIVE SCHOOL, (11-18)
PHYSICAL EDUCATION
To teach boys throughout the school. Applicants from a recognised PE College at advanced stage preferred. Facilities include joint use of Leisure Centre.

WEST MON COMPREHENSIVE SCHOOL, PONTPOOL (11-16)
MATHEMATICS/COMPUTER APPLICATIONS
To teach through the school O Level.

ST. MARY'S R.C. JUNIOR & INFANTS SCHOOL, CHEPSTOW
Experienced teacher for top juniors who has or is studying for the Catholic Teachers Certificate.

SOMERSET MATHEMATICS

continued

NORTH TYNSIDE

METROPOLITAN BOROUGH OF NORTH TYNSIDE
EDUCATION COMMITTEE
COMMUNITY HIGH SCHOOL
Preston Road, North Shields
Required for September 1984
Headteacher Designate: Mr. R. M. Blundell

Required for 1st September 1984 for this new school to be formed by the merger of Preston and Linnell High Schools.

Scale 1 TEACHER OF MATHEMATICS
Application forms are available on receipt of a s.a.s. from the Director of Education, Education Office, The Chase, North Shields, NE28 0HW and should be returned to the Headteacher Designate as soon as possible. (03342)

TEMPORARY TEACHERS OF MATHS/COMPUTER STUDIES
Scale 1
Dingle Lane, Rillington, West Midlands B59 3PF
Two posts are required at this level for entry co-educational school for pupils in the 11-16 age range. The appointments are for September 1984 for one year only initially.

Applications should be sent by letter (enclosing a s.a.s. and curriculum vitae) to the Headmaster at the school. Two references to the Headmaster at the school. (03342)

TEMPORARY TEACHER OF MATHS/COMPUTER STUDIES
Scale 1
PARK HALL SCHOOL
Water Orion Road, Cattle Bottom, Birmingham
Tel: 021-747 8876
Required for September 1984 in this 11-16 all ability school for pupils in the 11-16 age range. The appointments are for September 1984 for one year only initially. Further details to Headmaster at the school. (03342)

Apply by letter to the Headmaster enclosing a s.a.s. and curriculum vitae. Further details to Headmaster at the school. (03342)

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SOLI HULL

EDUCATION COMMITTEE

TEMPORARY TEACHER OF MATHS

Scale 1

Scale 1

Scale 1

Scale 1

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WILTSHIRE

CHURCHFIELD SCHOOL

Salisbury Grove, Swindon

SN3 1LR

Headteacher: Mr. I. F. Taylor

11-16 Mixed Comprehensive

Estimated N.O.R. 1259

Required for September 1984, a well qualified teacher of Mathematics, Scale 1, who will be expected to take charge of the school's mathematics department. The successful candidate will be expected to have a good knowledge of the subject and to be able to teach at all levels. Applications should be sent by letter to the Headmaster at the school, enclosing a s.a.s. and curriculum vitae. Further details to Headmaster at the school. (03342)

Apply by letter to the Headmaster enclosing a s.a.s. and curriculum vitae. Further details to Headmaster at the school. (03342)

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Apply by letter to the Headmaster enclosing a

KENT
COUNTY COUNCIL:
EDUCATION DEPARTMENT

**TONBRIDGE & MALLS
DIVISION
CLARE PARK SCHOOL**
144. Road, East Maitlands, Kent
Physical Education
September 1984
Teacher to join an
once successful and
well established School
extensive indoor
facilities and also man
of the local Leisure C
to contribute to wide r
activities with a partic
well stocked book
basketball. A full co
tion to extra curricula
will be expected
Apply with c.v.
Headmaster.

**ASHFORD DIVISION
HOMECWOOD SCHOOL**

Required Sept 1988
 This comprehensive and
 teacher of Boys' P.R.E.
 state second subject.
 Letter on app
 together with cur
 vides and stamped
 envelope should b
 the Headmaster, (1507)

LONDON (ESSEX)

CHIGWELL SCHOOL

Required Sept
 1988 (Class Indoor
 Schools). (19887) I

tion Committee
ises Scheme for teachers taking
from outside the County.
SCHOOLS
SCHOOL, Launceston Road
l. Group No. 11, No. of
rm of 120.
SCHER OF
SCIENCE - SCALE 1
1984, for the academic year 1
Environmental Science Depart
of Rural Science, Horticulture
including curriculum vitae and r
ferences, to the Headteacher.
Windmill Fowey

No. 10, No. on Roll 915.

TEACHER

1985, or September, 1984, if possible, for this thriving 11-18.

The successful candidate will be a Headteacher for all aspects of management but will have particular knowledge of the curriculum, time-table and assessment due to the promotion of a leadership of a large school with a

Application should be made by letter to the Headteacher () stating name, address, telephone number and professional referees. Close to

3 Highlanes, Hayle,

COMBINED SCIENCE -
 A teacher is required in September Science in the first three years.

including curriculum vitae and references to the Headteacher.
**RANNEL SCHOOL,
Stephen, St Austell,
Co. 9, No. on Roll 650.
PHYSICS/MATHEMATICS**
Mr. R. J. ...
r, 1984, teacher of P.E. and
subject. Temporary post for one
including curriculum vitae and
references, to the Headteacher.
**St. Tolgus Hill, Redruth,
Co. 13, No. on Roll 177**

ELECTRONICS
T.V.E.I. scheme being developed
than Burnham Scale 2.
alum vitae should be sent to the
her details are available.
Church Road, Pool,
I. Group No. 10, No. on

nsive school.
alum vitae to the Head Teach
available.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Cornwall Education Committee
There is a Removal Expenses Scheme for teachers taking up permanent appointments from outside the County.

COMPREHENSIVE SCHOOLS
CALLINGTON SCHOOL, Launceston Road, Callington, Cornwall. Group No. 11, No. on Roll 1220, Sixth Form of 120.

TEMPORARY TEACHER OF ENVIRONMENTAL SCIENCE - SCALE I
Required for September 1984, for the academic year 1984/5 as an assistant to help in the Environmental Science Department of the Fowey College of Agriculture, Horticulture and Agricultural Science.

Please apply by letter, including curriculum vitae and names and addresses of two referees, to the Headteacher.

FOWEY SCHOOL, Windmill, Fowey.

PHYSICS/MICRO ELECTRONICS
Required to teach on the T.V.E.I. scheme being developed at this school. Salary not less than Burnham Scale 2.
Applications with curriculum vitae should be sent to the Head Teacher from whom further details are available.

**POOL SCHOOL, Church Road, Pool,
Redruth, Cornwall. Group No. 10, No. on Roll
974**

GIRL'S P.E.
At the 11-16 comprehensive school.
Applications with curriculum vitae to the Head Teacher from whom further details are available.

152 (48) 17

SECONDARY PHYSICAL EDUCATION

continued

KIRKLEES

METROPOLITAN COUNCIL
DIRECTORATE OF
EDUCATION SERVICES
HOLMFIELD HIGH SCHOOL
Huddersfield, West Yorkshire
HD6 3SE
(0474) 555111

Required for September 1984 or November 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of boys in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Holmfield High School, Huddersfield, West Yorkshire HD6 3SE.

LONDON

URSULINE CONVENT
The Down, Wimbledon,
London SW20 2DQ
(01-871 8100)

Required for September 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of girls in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmistress, Ursuline Convent, The Down, Wimbledon, London SW20 2DQ.

NORFOLK

DIAS HIGH SCHOOL
Wickham Road, Duns, Norfolk
IP28 3DH
(0479) 555111

Required for September 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of boys in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Dias High School, Wickham Road, Duns, Norfolk IP28 3DH.

Scale 1 Secondary Vacancies PERMANENT APPOINTMENTS

D1 ENGLISH
Address School, Duttons Close, Langley Mill, Nottingham, NG16 4LH (11-16, NOR 808)

D2 ENGLISH
John Flaxman School, Derby, Derby, DE6 6NP (11-16, NOR 603)

D3 ENGLISH
Mortimer Wilson School, Grange Street, Alfreton, Derby, DE5 7JA (11-16, NOR 1600)

D4 GIRLS PE
Woodlands School, Blenheim Drive, Alfreton, Derby, DE5 2LW (11-16, NOR 1230)

D5 FRENCH (at least to 'O' level)
Chatterfield School, Brocksdale, Chatterfield, S40 9NS (13-18, NOR 808)

D6 GIRLS PE
Bokington School, Drontfield Road, Eddington, Sheffield, S31 0BR (11-16, NOR 1333)

D7 MATHEMATICS
Bosworth School, Sibley Lane, Drontfield Woodhouse, Sheffield, S18 5YN (11-14, NOR 850)

D8 HOME ECONOMICS
Moor School, Old Road, Chatterfield, S40 3QS (11-16, NOR 551)

D9A ENGLISH/FRENCH
D9B GIRLS PE
Woodlands School, Newbold, Chatterfield, S41 8AT (11-16, NOR 758)

D10A HOME ECONOMICS
D10B CREATIVE TEXTILES (Art/Graphic arts advantage)
Shirebrook School, Common Lane, Shirebrook, Mansfield, Notts, NG20 9QF (11-18, NOR 1254)

D11A HOME ECONOMICS (to 'A' level)
D11B GERMAN
St Helens School, Sheffield Road, Chatterfield, S41 7LN (13-16, NOR 859)

D12 CHEMISTRY
Thabthall School, High Street, Thabthall, Derby, DE5 6PP (11-16, NOR 800)

D13 ART
Tupton Hall School, Old Tupton, Chatterfield, S42 6LG (11-16, NOR 1713)

ONE YEAR CONTRACTS (to cover secondments)

D14A BOYS PE
D14B MATHEMATICS
Buxton College, College Road, Buxton, Derbyshire, SK17 9EA (11-18, NOR 868)

D15 MATHEMATICS
Chapel-en-le-Frith School, Long Lane, Chapel-en-le-Frith, Stockport, Cheshire, SK12 6TQ (11-16, NOR 781)

D16 CDT
Chatterfield School, Swarkestone Road, Chatterfield, Derby, DE7 1UA (11-16, NOR 859)

D17 ENGLISH (up to 'O' level)
Lady Manners School, Bakewell, Derbyshire, DE4 1JA (11-16, NOR 1374)

D18 MATHEMATICS
Queen Elizabeth's Grammar School, The Green Road, Aulsebrook, Derbyshire, DE8 1EP (11-18, NOR 1142)

Application forms and further details (see page 70) from the Headteachers to be returned as soon as possible to the Director of Education, Derbyshire County Council, Derbyshire County Council is an equal opportunity employer.

(4221)

DERBYSHIRE

OXFORDSHIRE

COUNTY COUNCIL
WOOD GREEN SCHOOL
Woodstock Road, Witney
Group 11 Roll 945
(01235) 555111

Required for September 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of boys in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Wood Green School, Woodstock Road, Witney Group 11 Roll 945.

SHROPSHIRE

EDUCATION COMMITTEE
MARY WEBB SCHOOL
Pontesbury, Shropshire
SY5 0TG
(051) 555111

Temporary Scale 1 teacher of Boys' P.E. required for September 1984 for one year. Further details and application forms from the Head (SAE), (01547) 134222

SHROPSHIRE

EDUCATION COMMITTEE
WROCKWORTH WOOD SCHOOL
New Road, Wrockwath, Wood, Telford TF2 6JZ
(0905) 555111

Temporary one year during secondment (from the Head of the school) of a qualified teacher of Physical Education (Scale 1). Further details and application forms from the Head (SAE), (01688) 134222

SUFFOLK

COUNTY COUNCIL
HIGHLANDS ROAD, HAYDON, SUFFOLK IP7 3JL
(01449) 555111

Required for September 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of boys in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Highlands Road, Haydon, Suffolk IP7 3JL.

Application forms and details obtainable from the Head of the school, please. (05764) 134222

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SUFFOLK

COUNTY COUNCIL
DENNIS HIGH SCHOOL
Varnham Road, Lowestoft
Group 11 Roll 945
(01449) 555111

Required for September 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of boys in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Dennis High School, Varnham Road, Lowestoft Group 11 Roll 945.

SUFFOLK

COUNTY COUNCIL
MARKET UPPER SCHOOL
Exning Road, Newmarket
(0438) 555111

Required for September 1984. A qualified teacher of Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of boys in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Market Upper School, Exning Road, Newmarket (0438) 555111.

Application forms and details obtainable from the Head of the school, please. (05764) 134222

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WILTSHIRE

MALMESBURY SCHOOL
Corn Garden, Malmesbury
Wiltshire
Number on Roll: 1000
Headmaster: Mr. J.A. ...

GIRLS' PHYSICAL EDUCATION - SCALE 1

Required in September a teacher of girls' Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of girls in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Malmesbury School, Corn Garden, Malmesbury Wiltshire.

Further details will be sent on receipt of a stamped addressed envelope.

Application by letter (no form) to the Headmaster, Malmesbury School, Corn Garden, Malmesbury, Wiltshire, giving the names of two referees. (0525) 134222

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KENT

COUNTY COUNCIL
EDUCATION DEPARTMENT
EDUCATION DIVISION
SIXTH FORM SCHOOL
Abney Park, Faversham
Kent
Number on Roll: 1000
Headmaster: Mr. J.A. ...

Required in September a teacher of girls' Physical Education (Scale 1) with a minimum of 5 years' experience. The successful candidate will be responsible for the Physical Education of girls in the school. The post is a full-time post with a salary of £13,422. Applications should be sent to the Headmaster, Sixth Form School, Abney Park, Faversham Kent.

Further details will be sent on receipt of a stamped addressed envelope.

Application by letter (no form) to the Headmaster, Sixth Form School, Abney Park, Faversham Kent, giving the names of two referees. (0525) 134222

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SIXTH FORM COLLEGES continued

HAMPSHIRE
FARNBOROUGH SIXTH FORM COLLEGE
Farnborough College, Farnborough, Hampshire
Applications for September 1984. For details see page 16-19. N.O.R. 1001

HAMPSHIRE
QUEEN MARY'S COLLEGE
Basingstoke, Hampshire RG21 3HF (04045) 140022

OXFORD
OXFORD SIXTH FORM COLLEGE
Oxford, Oxfordshire OX1 2HQ
Required for September 1984. For details see page 16-19. N.O.R. 1001

SEFTON
METROPOLITAN BOROUGH OF SEFTON SIXTH FORM COLLEGE
Sefton, Merseyside L68 7SR
Required for September 1984. For details see page 16-19. N.O.R. 1001

WEST SUSSEX
HAYWARDS HEATH SIXTH FORM COLLEGE
Haywards Heath, West Sussex RH16 1JH
Required for September 1984. For details see page 16-19. N.O.R. 1001

WEST SUSSEX
HAYWARDS HEATH SIXTH FORM COLLEGE
Haywards Heath, West Sussex RH16 1JH
Required for September 1984. For details see page 16-19. N.O.R. 1001

Education

Head Teacher

Shepherd School, Harvey Road, Off Beechdale Road, Billborough, Nottingham NG8 3BB.

Qualified teachers are invited to apply for appointment as Head Teacher of the above school. The vacancy is created by the promotion of the Head Teacher to an Inspector's post.

Number on roll: 170 (3½-18)

Salary Grade 7a

Vacant 1st September 1984

Application forms and further details may be obtained by forwarding a stamped addressed envelope to the Director of Education, at County Hall, Chelmsford CM1 1LD.

Closing date: 8th June, 1984.

Nottinghamshire County Council

County Hall, West Bridgford, Nottingham NG2 7RD

KENT

METROPOLITAN BOROUGH OF

THE ROSEWOOD SCHOOL

Overfield Road, Russell Hall Estate, Dunelm, West Midlands B35 5SA
Enthusiastic and versatile TEACHER required for small group of secondary aged children who have emotional and behavioural problems.
Interest in CRAFT (WOODWORK/METAL) WORKING an advantage. Salary £8 available for suitable candidate. Letters of application, with CV, and naming two referees to Headmaster, 103671 160022

OXFORDSHIRE

CARTERTON SCHOOL

Carterton, Oxfordshire OX1 2HQ
Required for September 1984. For details see page 16-19. N.O.R. 1001

HERTFORDSHIRE

KANGERS WOOD SCHOOL

South Oxhey, Hertfordshire SG13 6JH
Required for September 1984. For details see page 16-19. N.O.R. 1001

DEPUTY HEADSHIPS

Second Masters/Mistresses

DEVON

HAMPSHIRE

NETLEY COURT SCHOOL

Netley, Hampshire RG21 3HF (04045) 140022

HEADS OF DEPARTMENT

AVON COUNTY

HAYWARDS HEATH SIXTH FORM COLLEGE

Haywards Heath, West Sussex RH16 1JH
Required for September 1984. For details see page 16-19. N.O.R. 1001

WEST SUSSEX

HAYWARDS HEATH SIXTH FORM COLLEGE

Haywards Heath, West Sussex RH16 1JH
Required for September 1984. For details see page 16-19. N.O.R. 1001

BROMLEY

LONDON BOROUGH OF

BROMLEY

Bromley, Kent BR1 1JH
Required for September 1984. For details see page 16-19. N.O.R. 1001

ESSEX

SCHOOL

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NOTTINGHAMSHIRE

COUNCIL

EDUCATION

DEPARTMENT

Applications are invited from suitably qualified teachers for the following posts:
WILLIAM SHARP COMPREHENSIVE SCHOOL (HEARING IMPAIRED) UNIT
Broomfield Road, Nottingham NG8 4HY
Headmaster: P. Hynwood, M.A.
Mixed: 600 (11-16)

BUCKINGHAMSHIRE

COUNCIL

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Headmaster: P. Hynwood, M.A.
Mixed: 600 (11-16)

BUCKINGHAMSHIRE

COUNCIL

EDUCATION

DEPARTMENT

Applications are invited from suitably qualified teachers for the following posts:
WILLIAM SHARP COMPREHENSIVE SCHOOL (HEARING IMPAIRED) UNIT
Broomfield Road, Nottingham NG8 4HY
Headmaster: P. Hynwood, M.A.
Mixed: 600 (11-16)

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BUCKINGHAMSHIRE

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DEPARTMENT

Applications are invited from suitably qualified teachers for the following posts:
WILLIAM SHARP COMPREHENSIVE SCHOOL (HEARING IMPAIRED) UNIT
Broomfield Road, Nottingham NG8

ile colleges

IN THE LONDON
EDUCATION
AUTHORITY

Applications are invited for the following posts. Salary scales in accordance with the Burgham (FE) scale. Lecturers must have a first degree and appropriate qualifications (and postgraduate study) in the relevant field. On an incremental scale within the range of £5,649 - £11,568. For details of the posts, see the following pages.

ENGLISH AS A SECOND LANGUAGE
To teach EFL with some ESL. Candidates will need to have very strong academic and professional qualifications as well as appropriate experience. (Post Ref: 292).

NUMERACY - To teach numeracy and its applications on a wide range of YTS support courses. (Post Ref: 293).

RETURN TO STUDY TUTOR
To develop a new course in the Humanities for mature students and offer teaching in the Social Sciences. Candidates must be able to contribute to the development of the course. (Post Ref: 294).

ASSOCIATE LECTURER (O)
CLERICAL AND KEYBOARD SKILLS
To teach clerical skills and keyboarding on a range of courses including CGL 200 and R20. Basic clerical studies. (Post Ref: 295).

The following posts are to commence in September or next January. They may involve teaching on a part-time basis. Applicants should have previous experience working with young people and a commitment to adult life. (Post Ref: 296).

LECTURER II - ELECTRICAL/ELECTRONIC ENGINEERING
To teach EEE on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in EEE and appropriate experience. (Post Ref: 297).

LECTURER I - To teach English as a Second Language. Applicants should have a first degree in English and appropriate experience. (Post Ref: 298).

TEMPORARY LECTURER I - To teach English as a Second Language. Applicants should have a first degree in English and appropriate experience. (Post Ref: 299).

LECTURER I - LITERACY/NUMERACY
To teach literacy and numeracy on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Literacy/Numeracy and appropriate experience. (Post Ref: 300).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 301).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 302).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 303).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 304).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 305).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 306).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 307).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 308).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 309).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 310).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 311).

LECTURER I - COMMUNICATIONS IN THE OFFICE
To teach Communications in the Office on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Communications in the Office and appropriate experience. (Post Ref: 312).

CLEVELAND

STOCKPORT-BILLINGHAM TECHNICAL COLLEGE
LECTURER GRADE I IN ELECTRONICS (including Electronics and Electronics Technology)

This post requires a technical background and experience in teaching. The successful candidate will be responsible for the teaching of Electronics and Electronics Technology. (Post Ref: 292).

LECTURER GRADE I IN ELECTRONICS
To teach Electronics on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Electronics and appropriate experience. (Post Ref: 293).

LECTURER GRADE I IN ELECTRONICS
To teach Electronics on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Electronics and appropriate experience. (Post Ref: 294).

LECTURER GRADE I IN ELECTRONICS
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LECTURER GRADE I IN ELECTRONICS
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LECTURER GRADE I IN ELECTRONICS
To teach Electronics on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Electronics and appropriate experience. (Post Ref: 303).

LECTURER GRADE I IN ELECTRONICS
To teach Electronics on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Electronics and appropriate experience. (Post Ref: 304).

LECTURER GRADE I IN ELECTRONICS
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LECTURER GRADE I IN ELECTRONICS
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LECTURER GRADE I IN ELECTRONICS
To teach Electronics on a full-time basis. The course is a new and innovative one, involving the use of microprocessors and computers. Applicants should have a first degree in Electronics and appropriate experience. (Post Ref: 313).

EAST DEVON

EAST DEVON COLLEGE OF FURTHER EDUCATION
LECTURER GRADE I IN ELECTRONICS (including Electronics and Electronics Technology)

This post requires a technical background and experience in teaching. The successful candidate will be responsible for the teaching of Electronics and Electronics Technology. (Post Ref: 292).

LECTURER GRADE I IN ELECTRONICS
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City of Salford

SALFORD COLLEGE OF TECHNOLOGY
Applications are invited from suitably qualified persons with honours degree and/or professional qualifications to the following posts to be offered from 1 September 1984 as soon as possible thereafter. Candidates should have relevant professional/industrial/commercial experience and preferably with appropriate teaching experience in Further Education.

DEPARTMENT OF ART AND INDUSTRIAL DESIGN
HEAD OF THREE DIMENSIONAL DESIGN
LECTURER I IN CREATIVE TYPOGRAPHY

Department of Business Information Processing
LECTURER I IN BUSINESS COMPUTING
LECTURER I IN OFFICE TECHNOLOGY

Department of Business Management
LECTURER I IN BUSINESS STUDIES
— LEGAL ASPECTS
LECTURER I IN QUANTITATIVE TECHNIQUES — ECONOMICS

TEMPORARY LECTURER I IN MARKETING
Department of Construction and Surveying
TEMPORARY LECTURER I IN PLUMBING/WELDING
TEMPORARY LECTURER I IN FLOOR COVERING

Department of Engineering
LECTURER I IN ELECTRONICS (INSTRUMENTATION AND CONTROL)
Department of Food and Home Economics
LECTURER I IN CATERING (COSTING CONTROL SUPERVISORY STUDIES)
TEMPORARY LECTURER I IN MEAT TECHNOLOGY
TEMPORARY LECTURER I IN CATERING

Department of Humanities
SENIOR LECTURER IN COMMUNICATION STUDIES
LECTURER I IN PERFORMANCE ARTS/MEDIA TECHNOLOGY
Department of Science
LECTURER I IN MATHEMATICS AND COMPUTING

Salary scales in accordance with Burgham FE scales at Lecturer I £5,649-£9,736 (per annum) under review Lecturer II £7,215-£11,568 (per annum) under review Senior Lecturer £10,683-£13,443 (per annum) under review

Principal Lecturer with grade and starting salary dependent on qualifications and previous experience. Temporary Lecturer appointments are normally for one academic year.

Further particulars and application forms may be obtained from the Principal, Salford College of Technology, Frederick Road, Salford, M6 6PU. Tel: 051-738 6641. (Closing date 11.06.84) to whom completed forms should be returned without delay.

Salford College of Technology

Blackpool and Fylde College
of Further and Higher Education

FACULTY OF ARTS
Department of Visual Communications
LECTURER II - COMPUTER GRAPHICS (Ref: AB2/84)

FACULTY OF BUSINESS FOOD AND MANAGEMENT
Department of Hotel and Food Craft Studies
LECTURER I - MEAT TECHNOLOGY AND PRACTICAL BUTCHERY (Ref: BFM/84)

FACULTY OF SCIENCE AND TECHNOLOGY
Department of Mathematics and Science
LECTURER I - PHYSICAL SCIENCE (Ref: STU/84)
LECTURER I - MATHEMATICS (Ref: STU/84)
(Temporary appointment from 1st September 1984 until 31st August 1985).

Re-Advertisement
Department of Electrical and Electronic Engineering
LECTURER I - ELECTRONIC ENGINEERING (Ref: STU/84)

For further particulars and application form, apply to: The Principal, Blackpool and Fylde College of Further and Higher Education, Ashfield Road, Bispham, Blackpool FY5 0HB.

Closing date for all posts: Friday, 8th June 1984. Lancashire County Council is an equal opportunity employer.

LANCASHIRE COUNTY COUNCIL

HEREFORD AND WORCESTER

THE COUNTY COUNCIL OF HEREFORD AND WORCESTER
REDDITCH COLLEGE

Department of Business and Secretarial Studies
TWO LECTURER GRADE I FOR HAIRDRESSING

Required for September 1984 to teach on full-time and part-time hairdressing courses.

Applicants should be well qualified and preferably hold the City and Guilds Advanced Certificate in Hairdressing.

Practical salon experience is essential and a teaching qualification and/or teaching experience is desirable.

Salary for Lecturer Grade I is £5,649 - £9,736 p.a. (under review).

Further particulars and application forms may be obtained from the Principal, Redditch College, Park Road, Redditch, Worcs. B98 3DW. Tel: (0547) 65607.

Closing date for receipt of applications is 14 days from the appearance of this advertisement. (03075) 280026

HAMPSTON COLLEGE OF FURTHER EDUCATION
LECTURER I (O) SECRETARIAL DUTIES

A Lecturer Grade I (O) in Secretarial Studies is required as soon as possible to teach primarily on a part-time basis. Applicants will be expected to teach up to 12 hours per week in a standard in shorthand and typewriting, and should possess appropriate professional and teaching qualifications.

Salary as per FE Burgham (pro rata) £5,649 - £9,736 p.a. (under review) plus 10% London Allowance.

Application forms and further details are available from the Principal, Hampston College of Further Education, 101-103, Bridge Road, Hatch End, Middlesex HA8 7JH. Tel: 01-881 0181 to whom they should be returned by 6.6.1984.

HARROW COLLEGE OF FURTHER EDUCATION
LECTURER I IN EQUAL OPPORTUNITIES

A Lecturer Grade I in Equal Opportunities is required as soon as possible to teach primarily on a part-time basis. Applicants will be expected to teach up to 12 hours per week in a standard in shorthand and typewriting, and should possess appropriate professional and teaching qualifications.

Salary as per FE Burgham (pro rata) £5,649 - £9,736 p.a. (under review) plus 10% London Allowance.

Application forms and further details are available from the Principal, Harrow College of Further Education, 101-103, Bridge Road, Hatch End, Middlesex HA8 7JH. Tel: 01-881 0181 to whom they should be returned by 6.6.1984.

HUMBERSIDE COUNTY COUNCIL
EDUCATION CENTRE

LECTURER I IN SECRETARIAL DUTIES

To be responsible for the coordination of all the Business Studies, Secretarial and Distribution courses (full-time, part-time and YTS courses).

Application forms and further details are available from the Principal, Humberside Education Centre, 101-103, Bridge Road, Hatch End, Middlesex HA8 7JH. Tel: 01-881 0181 to whom they should be returned by 6.6.1984.

KENT COUNTY COUNCIL
EDUCATION DEPARTMENT

LECTURER I IN SECRETARIAL DUTIES

To be responsible for the coordination of all the Business Studies, Secretarial and Distribution courses (full-time, part-time and YTS courses).

Application forms and further details are available from the Principal, Kent County Council, 101-103, Bridge Road, Hatch End, Middlesex HA8 7JH. Tel: 01-881 0181 to whom they should be returned by 6.6.1984.

MANCHESTER CITY OF MANCHESTER
EDUCATION COMMITTEE

LECTURER I IN SECRETARIAL DUTIES

To be responsible for the coordination of all the Business Studies, Secretarial and Distribution courses (full-time, part-time and YTS courses).

Application forms and further details are available from the Principal, Manchester City of Manchester, 101-103, Bridge Road, Hatch End, Middlesex HA8 7JH. Tel: 01-881 0181 to whom they should be returned by 6.6.1984.

MERTON COLLEGE
MERTON COLLEGE

LECTURER I IN SECRETARIAL DUTIES

To be responsible for the coordination of all the Business Studies, Secretarial and Distribution courses (full-time, part-time and YTS courses).

Application forms and further details are available from the Principal, Merton College, 101-103, Bridge Road, Hatch End, Middlesex HA8 7JH. Tel: 01-881 0181 to whom they should be returned by 6.6.1984.

MERTON COLLEGE
MERTON COLLEGE

LECTURER I IN SECRETARIAL DUTIES

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MERTON COLLEGE

LECTURER I IN SECRETARIAL DUTIES

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85

Systems Training and Management Services

The Civil Service College provides management and development training for civil servants at its centres in Sunningdale and London.

At least 4 lectures are now sought who can make significant contributions in the following areas: **Management services** - development of new and updating established courses; **Information technology** (ie computers, office systems and telecommunications) - structured methodologies; systems analysis; analytical and design techniques; database management/transaction processing systems.

Candidates (normally at least 28) should preferably be graduates with a relevant academic or professional qualification and must have at least 2 years' experience in one or more of the areas previously stated. A high standard of teaching is expected. Well-qualified candidates without teaching experience will be considered, but will be required to attend the College's own courses in teaching techniques, methods and practices if selected for appointment.

These London-based appointments will normally be for 5 years in the first instance with the possibility of extension or conversion to permanent appointments. Secondments of not less than 2 years' duration also possible.

SALARY (under review): 511325-513765. Starting salary according to qualifications and experience.

For further details and an application form (to be returned by 18 June 1984) write to Civil Service Commission, Alencon Link, Basingstoke, Hants, RG21 1JB, or telephone Basingstoke (0256) 48551 (answering service operates outside office hours). Please quote ref. **G/6236**.

Civil Service College

The Civil Service is an equal opportunity employer

S.A. 1. 82

MISCELLANEOUS CONT

You'll get a lot more out of helping the adults to get their sums right.

And you won't be the first man or woman to leave the teaching profession for Cannon Assurance and never look back.

It's a fact that teachers have many of the qualities that make Cannon Consultants so successful in advising people on savings, life assurance, tax and retirement plans.

If you're energetic, committed, and particularly good at explaining complex subjects in simple terms then you should talk to us.

A career with Cannon offers comprehensive training, rewards which can be very substantial, freedom to plan your own work and management prospects if that's what you want.

Telephone: GEORGE JUCKES, SOUTHERN GROUP MANAGER on 01-902 8876

COLIN KELSEY, EASTERN GROUP MANAGER on 01-902 8876

JOHN TURNER, NORTH & WEST GROUP MANAGER on Liverpool (051) 709 6227.

Or write to JOHN BIRD, GENERAL SALES MANAGER, Cannon Assurance Limited, 1 Olympic Way, Wembley, Middlesex, HA9 0NB.



Cannon Assurance

A Member of the Cascade Group of Companies

HILLINGDON BOROUGH OF
PERIPATETIC CELLO/HARP
Activities required for
September 1984.
Scale 5 post available for a
suitable qualified teacher.
Duties will include group
sessions to selected children in
Primary and Secondary
Schools, and playing in the
Borough string Ensemble.
Application forms from the
Director of Education, Civic
Centre, Uxbridge, Middlesex,
Tel: Uxbridge 5041 to whom
they should be returned as
soon as possible and not later
than 8th June 1984.
Outer London Allowance
payable. (02946) 660000

SOUTH TYNESIDE BOROUGH OF
TECHNICAL AND
VOCATIONAL EDUCATION
INITIATIVE
APPOINTMENT OF PROJECT
DIRECTOR
The Project Director will be
responsible to the Director of
Education for the develop-
ment and overall running of
the scheme. Applicants must
have an understanding of and
sympathy with the broad aims
of the scheme and be able to
establish and maintain good
working relationships with
the difference participants in
the scheme. Experience of re-
cent developments in techni-
cal and vocational education
would be an advantage.
Further details and applica-
tion forms from Education
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